

1.0 INTRODUCTION

1.1 FOREWORD

This Alternatives Selection Report describes the development and evaluation of capacity improvement alternatives on Interstate 10 (I-10) from State Route 51 (Milepost 147.5) to the Santan Freeway (Milepost 160.9). This project is located in the Arizona Department of Transportation's (ADOT's) Phoenix District within Maricopa County in south-central Arizona. The study area also includes the segment of Interstate 17 from the I-10/I-17 Traffic Interchange (TI) (Milepost 193.9) west to 7th Avenue (Milepost 196.9), SR 143 from Broadway Road (Milepost 0.0) north to just south of the south bank of the Salt River (Milepost 1.4), and US 60 from the I-10/US60 TI (Milepost 172.0) east to Mill Avenue (Milepost 173.7). Project location and vicinity maps are provided with Figures 1 and 2, respectively.

The Arizona Transportation Board has approved funding in the current ADOT Tentative Five-Year Transportation Facilities Construction Program (2008-2012) to begin construction of this project.

The goal of this study project is to develop a long-term master plan for the I-10 corridor in accordance with the approved regional and local transportation plans, to optimize the traffic operations within the corridor with the Design Year 2030 traffic demand, to retain local access at existing traffic interchanges, and to minimize or mitigate impacts the improvements may have on the surrounding community. A DCR, Implementation Plan, and EIS will be developed in support of this study.

This report describes the development and evaluation of alternative I-10 widening concepts and local access options. The alternatives recommended for further study were selected based on an evaluation of design criteria, traffic operational characteristics, environmental impacts, right-of-way impacts, local access opportunities, construction cost, and agency input. Public agencies that have been involved with this project include ADOT; FHWA; MAG; FAA; the Town of Guadalupe; and the cities of Phoenix, Tempe and Chandler.

1.2 NEED FOR THE PROJECT

Interstate 10 (I-10) is a major component of the Federal Interstate Highway System and a major element of the Maricopa Association of Governments (MAG) adopted Regional Transportation Plan Freeway Program (RTPFP).

This segment of I-10 accommodates local, regional and interstate traffic originating from I-10 to the west and south, I-17, State Route 51 (SR 51), the Red Mountain Freeway (SR 202L), the Hohokam Expressway (SR 143), the Superstition Freeway (US 60), the Santan Freeway (SR 202L), the future South Mountain Freeway (SR 202L), the Pima and Price Freeways (SR 101L); and Sky Harbor Boulevard. This segment of I-10 serves the growing number of people who reside in the south and east Valley that work at the major employment centers within the Phoenix Central Business District; Phoenix Sky Harbor International Airport; City of Tempe; Arizona State

University; and other significant commercial, industrial and warehouse/distribution employers throughout the area.

I-10 also serves as one of the primary transportation corridors for the movement of freight within Maricopa County, and between Maricopa County and other metropolitan areas within and outside of the State of Arizona.

Maricopa County has been one of the fastest growing regions in the United States. Population projections indicate the population of Maricopa County will double between 2000 and 2030. Subsequently, traffic demand is causing the I-10 corridor and adjacent local arterial street system to become increasingly congested during the morning and evening peak travel periods. Future traffic volume projections indicate the congestion will continue to worsen, causing further travel delays and increased travel times for those using the I-10 corridor. Increased congestion on I-10 will cause travelers to divert their trips to other freeway corridors and the local arterial street system, causing these transportation facilities to continue to become increasingly congested as well. Improvements to the I-10 corridor are necessary to increase the freeway capacity and help alleviate increased levels of traffic congestion on all components of the overall transportation system in the study area.

MAG, RPTA (Valley Metro) and ADOT have worked together for many years to develop a comprehensive plan for the Regional Freeway System which is included in the RTP that was adopted by the MAG Regional Council in November 2003.

The voters of Maricopa County passed Proposition 400 in November 2004, which authorized the continuation of the existing half-cent sales tax for the next 20 years to be used for implementing the RTP. A portion of the revenues collected from the half-cent sales tax extension will be deposited into the Regional Area Road Fund (RARF) to fund the RTPFP. This project is included in the RTPFP.

The Regional Transportation Plan (RTP) and Transportation Improvement Plan (TIP) include the construction of separate express and local lanes (previously termed Collector-Distributor roads) on I-10 between Buckeye Road and Baseline Road in accordance with the *Interstate 10 Corridor Refinement Study* (1988). However, the Express/Local Lanes concept developed in 1988 was based upon traffic volume projections that were forecast to year 2005 with an anticipated travel demand of 250,000 vehicles per day (vpd) at the Broadway Curve. Recent traffic count data (2006) indicates the volume of traffic traveling through the Broadway Curve is approximately 294,000 vpd.

Subsequently, the purpose of this study is to: 1.) evaluate the existing and future levels-of-service along the I-10 corridor; 2.) evaluate the operational performance of the I-10 Express/Local Lane concept recommended from the *I-10 Corridor Refinement Study* with Design Year 2030 traffic volume projections; 3.) develop an ultimate plan for this segment of the I-10 corridor that will operate efficiently with the projected 2030 travel demand; and, 4.) develop a phased implementation plan for programming staged construction projects with the funding identified in the RTP and as additional funding may become available in the future.

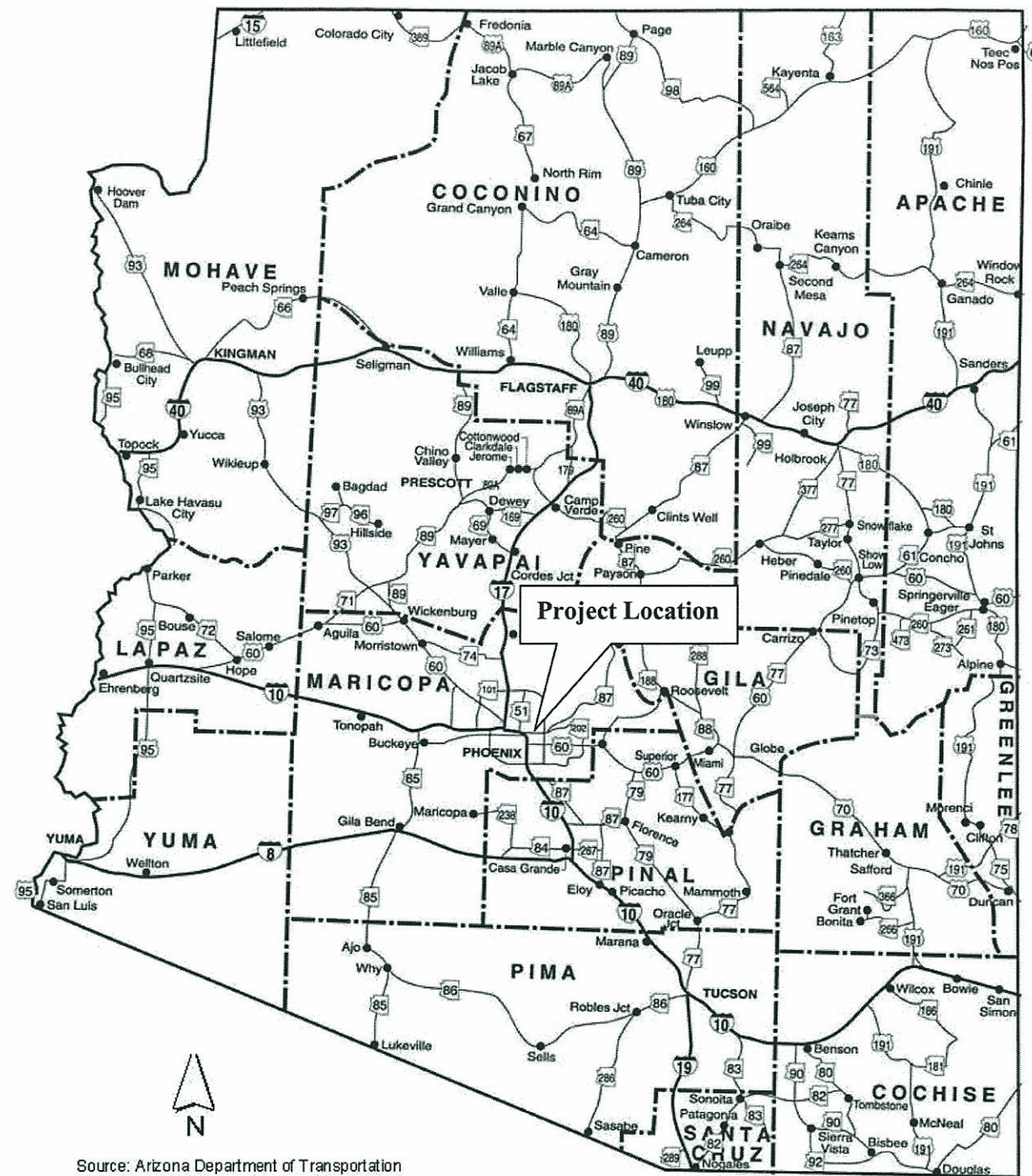


Figure 1 – Project Location Map

1.3 CHARACTERISTICS OF THE CORRIDOR

This segment of I-10 provides a vital transportation artery in central Maricopa County that links I-10, I-17, SR 51, SR 143, US 60, and SR 202L and provides direct access between the communities in the south and east valley to the Phoenix Sky Harbor International Airport; Arizona State University; the City of Tempe; the Phoenix central business district; and the residential, commercial, industrial and warehouse/distribution center developments in the study area.

1.3.1 Roadway Characteristics

Interstate 10

I-10 is classified as a controlled access Urban Principal Arterial – Interstate with a posted speed limit of 55 mph. The existing number of lanes and mainline roadway sections are depicted on Figure 5 on page 33.

The eastbound and westbound median shoulder is typically 13' wide throughout the corridor, with the exception of a 10' shoulder on the westbound roadway between the I-10/I-17 TI and 40th Street where the roadway striping has been modified to provide an additional general-purpose lane approaching the I-10/I-17 TI. The outside shoulder is consistently 12' wide throughout the study area. A 32" median concrete barrier separates the eastbound and westbound roadways.

I-10 is elevated between Roosevelt Street and I-17, transitioning to a short segment of depressed freeway at the I-10/I-17 TI, and then transitioning back to an elevated freeway between 24th Street and the Salt River. East of the Salt River, I-10 becomes an at-grade freeway near 32nd Street that continues to US 60. I-10 then passes over Baseline Road and transitions back to an at-grade facility that continues to the south to the Santan Freeway. I-10 is generally bordered with noise walls, earth berms, or a combination of berms and walls along residential developments.

I-10 intersects SR 51, I-17, SR 143, US 60, and SR 202L with freeway-to-freeway traffic interchanges. With the exception of SR 143, the interchanges include fully directional ramp connections for all traffic movements between each freeway. Additional freeway lanes are provided on the I-10 mainline, and the intersecting freeways, to improve maneuverability for traffic approaching and departing the interchanges.

An HOV lane directional ramp has been provided at the I-10/SR51/SR202L TI to provide access between I-10 (to/from the south) and SR 51 (to/from the north), and between I-10 (to/from the west) and SR 202L (to/from the east). The I-10/US60 TI includes an HOV lane directional ramp that provides direct HOV access between I-10 (to/from the west) and US 60 (to/from the east). One additional HOV ramp is identified in the RTP at the I-10/SR202L (Santan) TI to provide a direct HOV ramp connection between I-10 (to/from the north) and SR 202L (to/from the east). A potential future HOV lane directional ramp is planned at the I-10/I-17 (Maricopa) TI to provide access between I-10 (to/from the east) and I-17 (to/from the west).



The SR 143 interchange is a partial cloverleaf configuration that includes directional ramp connections between westbound I-10 and northbound SR 143, and southbound SR 143 to westbound I-10. A loop ramp provides a free-flow freeway-to-freeway connection between southbound SR 143 and eastbound I-10. A service interchange ramp connection with 48th Street (at a signalized intersection) provides for the freeway-to-freeway traffic movement between eastbound I-10 and northbound SR143, and the local access connections to 48th Street and Broadway Road.

Local arterial street interchanges along I-10 provide full freeway access at Washington/Jefferson Streets, 32nd Street, 40th Street, Broadway Road, Baseline Road, Elliot Road, Warner Road, Ray Road and Chandler Boulevard. One-way connector roads provide access between Jefferson Street and Sky Harbor Circle North.

Half-diamond interchanges are provided at Buckeye Road (ramps to/from the south) and 24th Street (ramps to/from the east). Grade separations and freeway overpasses provide local street connectivity at Roosevelt Street, Van Buren Street, Mohave Street, Southern Avenue and Guadalupe Road.

Washington Street is a four lane one-way arterial street in the westbound direction of travel at the Washington/Jefferson Street TI. Conversely, Jefferson Street is a four lane one-way arterial street in the eastbound direction of travel that operates as a couplet with Washington Street.

Access to Phoenix Sky Harbor International Airport (PSHIA) is provided with directional ramp connections between I-10 and Sky Harbor Boulevard (to/from the north). Access between the airport and I-10 (to/from the south) is also provided with the Buckeye Road TI.

Buckeye Road is a six lane arterial street west of I-10 and a five lane arterial street east of I-10. At the Buckeye Road TI, the street section consists of three lanes in the eastbound direction of travel, three lanes in the westbound direction of travel, and one left-turn lane for the westbound to southbound traffic movement. A right-turn lane is also provided for the eastbound to southbound traffic movement.

24th Street is a four lane arterial street south of I-10 and a six lane arterial street north of I-10. At the 24th Street TI, the street section consists of two lanes in the southbound direction of travel, two lanes in the northbound direction of travel, and two left-turn lanes for the southbound to eastbound traffic movement.

32nd Street is a four lane arterial street. At the 32nd Street TI, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, two left-turn lanes (one mandatory and one optional) for the northbound to westbound traffic movement, and two left-turn lanes (one mandatory and one optional) for the southbound to eastbound traffic movement. A right-turn lane is provided for the southbound to westbound traffic movement.

40th Street is a five lane arterial street south of I-10, and a six lane arterial street north of I-10. At the 40th Street TI, the street section consists of two lanes in the northbound direction of travel, and three lanes in the southbound direction of travel. One additional southbound lane (4 lanes total) is

provided south of the north ramp intersection to develop an exit for the loop ramp for the southbound to eastbound traffic movement. Two left-turn lanes are provided at the north ramp intersection for the northbound to westbound traffic movement. Right-turn lanes are provided for the southbound to westbound and northbound to eastbound traffic movements.

48th Street is a six lane arterial street south of Broadway Road that continues to the north to the signalized intersection with the I-10 eastbound exit ramp. North of the ramp intersection, 48th Street transitions into the SR 143 mainline in the northbound and southbound directions of travel.

Broadway Road is a six lane arterial street. At the Broadway Road TI, the street section consists of three lanes in the westbound direction of travel, three lanes in the eastbound direction of travel, and one left-turn lane for the westbound to southbound traffic movement. A right-turn lane is provided for the eastbound to southbound traffic movement. Two right-turn lanes (one lane mandatory and one lane optional) are provided for the westbound to northbound (to westbound I-10) traffic movement.

Baseline Road is a six lane arterial street. At the Baseline Road TI, the street section consists of three lanes in the eastbound direction of travel, three lanes in the westbound direction of travel, two left-turn lanes for the westbound to southbound traffic movement, and two left-turn lanes for eastbound to northbound traffic movement. Right-turn lanes are provided for the westbound to northbound and eastbound to southbound traffic movements.

Elliot Road is a six lane arterial street. At the Elliot Road TI, the street section consists of three lanes in the eastbound direction of travel, three lanes in the westbound direction of travel, two left-turn lanes for the westbound to southbound traffic movement, and two left-turn lanes for the eastbound to northbound traffic movement. Two right-turn lanes are provided for the westbound to northbound traffic movement.

Warner Road is a four lane arterial street. At the Warner Road TI, the street section consists of two lanes in the eastbound direction of travel, two lanes in the westbound direction of travel, two left-turn lanes for the eastbound to northbound traffic movement, and one left-turn lane for the westbound to southbound traffic movement. A right-turn lane is provided for the westbound to northbound movement.

Ray Road is a six lane arterial street. At the Ray Road TI, the street section consists of three lanes in the eastbound direction of travel, three lanes in the westbound direction of travel, two left-turn lanes for the eastbound to northbound traffic movement, and two left-turn lanes for the westbound to southbound traffic movement. Right-turn lanes are provided for the westbound to northbound and eastbound to southbound traffic movements.

Chandler Boulevard is a six lane arterial street. At the Chandler Boulevard TI, the street section consists of three lanes in the eastbound direction of travel, three lanes in the westbound direction of travel, two left-turn lanes for the eastbound to northbound traffic movement, and one left-turn lane for the westbound to southbound traffic movement. Right-turn lanes are provided for the westbound to northbound and eastbound to southbound traffic movements.

Roosevelt Street and Guadalupe Road are two lane collector streets, with one lane in each direction of travel at the I-10 crossings. Van Buren Street, Sky Harbor Circle North, Mohave Street and Southern Avenue are four lane collector streets with two lanes in each direction of travel at the I-10 crossings. A left-turn lane is provided on Sky Harbor Circle North for the eastbound to northbound traffic movement to the northbound connector road.

The Union Pacific Railroad (UPRR) passes beneath I-10 between Jefferson Street and Sky Harbor Circle North. The freeway passes over the Salt River between 24th and 32nd Streets. The Western and Highline Canals also pass beneath I-10 south of US 60 and Baseline Road, respectively.

The Central Phoenix-East Valley Light Rail Transit (LRT) "METRO" line will pass beneath I-10 at the Washington/Jefferson Street TI. The METRO maintenance facility and mainline segments are currently under construction with the system scheduled to be operational by December 2008.

At the request of the City of Tempe, ADOT recently conducted a feasibility study of possible future pedestrian/bicycle overpasses at Alameda Drive and the Western Canal. These facilities may be constructed with the I-10 improvements pending funding availability from the City of Tempe.

Interstate 17

I-17 is classified as a controlled access Urban Principal Arterial – Interstate with three general-purpose lanes in each direction of travel. This elevated freeway has a posted speed limit is 55 mph. The existing number of lanes and roadway sections are depicted on Figure 5 on page 33.

The eastbound and westbound median and outside shoulders are 7' and 10' wide, respectively. A 32" median concrete barrier separates the eastbound and westbound roadways.

Service interchanges provide full freeway access at 7th Avenue and 7th Street. A half-diamond interchange is provided at 16th Street (ramps to/from the west). Freeway overpasses provide local street connectivity at 12th Avenue and Central Avenue. One way frontage roads (two lanes) are provided from 16th Street to the west that provides access to adjacent residential and commercial development. In addition, an existing access road (privately owned) provides access to numerous commercial businesses south of I-17 and east of 16th Street.

7th Avenue is a four lane arterial street. At the 7th Avenue TI, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, one left-turn lane for the northbound to westbound traffic movement, and one left-turn lane for the southbound to eastbound traffic movement.

Central Avenue is a four lane arterial street. At the frontage road intersections, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, one left-turn lane for the northbound to westbound traffic movement, and one left-turn lane for the southbound to eastbound traffic movement.

7th Street is a five lane arterial street north of I-17 and a four lane arterial south of I-17. At the 7th Street TI, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, one left-turn lane for the northbound to westbound traffic movement, and two left-turn lanes for the southbound to eastbound traffic movement. A right-turn lane is provided for the southbound to westbound traffic movement.

16th Street is a five lane arterial street north of I-17 and a four lane arterial south of I-17. At the 16th Street TI, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, one left-turn lane for the northbound to westbound traffic movement, and one left-turn lane for the southbound to eastbound traffic movement (to the local access road). A right-turn lane is provided for the southbound to westbound traffic movement.

A UPRR spur track crosses beneath I-17 at 3rd Street and 12th Avenue, and a pedestrian underpass crosses beneath I-17 at 12th Street.

State Route 143

SR 143 is classified as a controlled access Urban Principal Arterial – Other Freeway with three general-purpose lanes in each direction of travel and a posted speed limit of 55 mph. SR 143 is the primary route between the south and southeast Valley communities and Phoenix Sky Harbor International Airport.

SR 143 is generally at-grade but passes over University Drive, the Salt River and the SR 202L Connector. The existing number of lanes and roadway sections are depicted on Figure 5 on page 33.

The northbound and southbound median and outside shoulders are typically 10' and 12' wide, respectively. However, the northbound and southbound median shoulder widths are 4' between the I-10 overpass and the north University Drive entrance and exit ramps. The outside shoulder width on the northbound roadway has been reduced to 4' to develop an additional general-purpose lane over the University Drive overpass. A 32" median concrete barrier separates the northbound and southbound roadways.

The University Drive TI is a single-point urban interchange (SPUI) that provides full freeway access to SR 143. Two lane, two-way frontage roads are located along each side of SR 143 between I-10 and University Drive. The frontage roads provide access to the existing commercial, industrial, warehouse/distribution, and educational land uses adjacent to SR 143 and north of I-10.

University Drive is a four lane arterial street. At the University Drive TI, the street section consists of two lanes in the eastbound direction of travel, two lanes in the westbound direction of travel, two left-turn lanes for the eastbound to northbound traffic movement, and two left-turn lanes for the westbound to southbound traffic movement. Right-turn lanes are provided for the westbound to northbound and eastbound to southbound traffic movements.

Phoenix Sky Harbor International Airport (PSHIA) is currently conducting a study to reconfigure their east airport access connection with SR 143, SR 153, and the SR 202L Connector. The

existing interchange will likely be reconfigured to a new fully directional interchange with ramp connections between SR 143, Sky Harbor Boulevard, and the SR 202L Connector. SR 153 would be removed from the Regional Freeway System, and reclassified to an arterial street that would become the responsibility of the City of Phoenix.

US 60

US 60 is classified as a controlled access Urban Principal Arterial – Other Freeway with a posted speed limit of 55 mph. US 60 consists of three general-purpose lanes, one HOV lane, and one auxiliary lane (between the Priest Drive and Mill Avenue ramps) in each direction of travel separated by a concrete median barrier. The median and outside shoulders are 10' and 12' wide, respectively.

The freeway is elevated between I-10 and Priest Drive, transitioning to a depressed freeway between Hardy Drive and Mill Avenue. US60 is generally bordered with noise walls, earthen berms, or a combination of berms and walls along developed areas.

A service interchange provides full freeway access at Mill Avenue. A half-diamond interchange is provided at Priest Drive (ramps to/from the east).

Priest Drive is a six lane arterial street. At the Priest Drive TI, the street section consists of three lanes in the northbound direction of travel, three lanes in the southbound direction of travel, and two left-turn lanes for the southbound to eastbound traffic movement. A right-turn lane is provided for the northbound to eastbound traffic movement.

Mill Avenue is a four lane arterial street. At the Mill Avenue TI, the street section consists of two lanes in the northbound direction of travel, two lanes in the southbound direction of travel, two left-turn lanes for the southbound to eastbound traffic movement, and one left-turn lane for the northbound to westbound traffic movement.

Grade separations provide local street connectivity at Hardy Drive and Kyrene Road. Hardy Drive and Kyrene Road are two lane collector streets, with one lane in each direction of travel at the US 60 crossings. In addition, a UPRR spur track crosses over US 60 with an underpass east of Kyrene Road.

Local Roads

Old Tower Road is an existing two lane street that is located immediately north of I-10, between 24th Street and the Salt River. This roadway provides access between 24th Street and the air cargo facilities located south of the airport runways and north of the Salt River.

A short segment of University Drive parallels the west ADOT right-of-way east of 24th Street and west of I-10. This roadway continues to Magnolia Street to provide street connectivity and access to the existing businesses in the area.

Diablo Way is located immediately west of I-10 between Alameda and Fairmont Drives, and provides street circulation and emergency services access to the adjacent commercial and recreational land uses. If impacted by the I-10 improvements, the City of Tempe would allow Diablo Way to be either relocated further to the west, or removed from service. If Diablo Way is removed from service, cul-de-sacs would be placed at the east end of Alameda Drive and Fairmont Drive.

1.3.2 Transit Facilities and Routes

The Central Phoenix-East Valley Light Rail Transit (LRT) "METRO" line will pass beneath I-10 at the Washington/Jefferson Street TI. A transit station is planned east of I-10 near 24th Street. The METRO line segments are currently under construction and the system is scheduled to be operational by December 2008.

The MAG Regional Council adopted the recommendations of the *High Capacity Transit Plan (HCTP)* in June 2003. This study was conducted to develop a network of transit services to meet the growing travel demand of the MAG region. This long range study considered projected travel demand in the MAG region with a forecast horizon year of 2040 and a projected population of over 7 million residents and is intended to provide the policy framework for transit technology investments in the future.

As shown on Figure 3 on the following page, the recommendations of the HCTP included Express Bus and Bus Rapid Transit (BRT) that would use the existing and planned HOV lanes throughout the Regional Freeway System. The recommendations of this study were included in the transit component of the RTP. The I-10 Corridor Improvement Study will evaluate the projected travel demand for the HOV lanes, and attempt to provide a sufficient number of HOV lanes to provide the capacity for the demand.

The HCTP also recommended a future LRT corridor that would use the existing north-south UPRR spur east of I-10. This spur provides rail access between the City of Tempe and southwest Chandler, and would connect to the METRO line at Apache Boulevard.

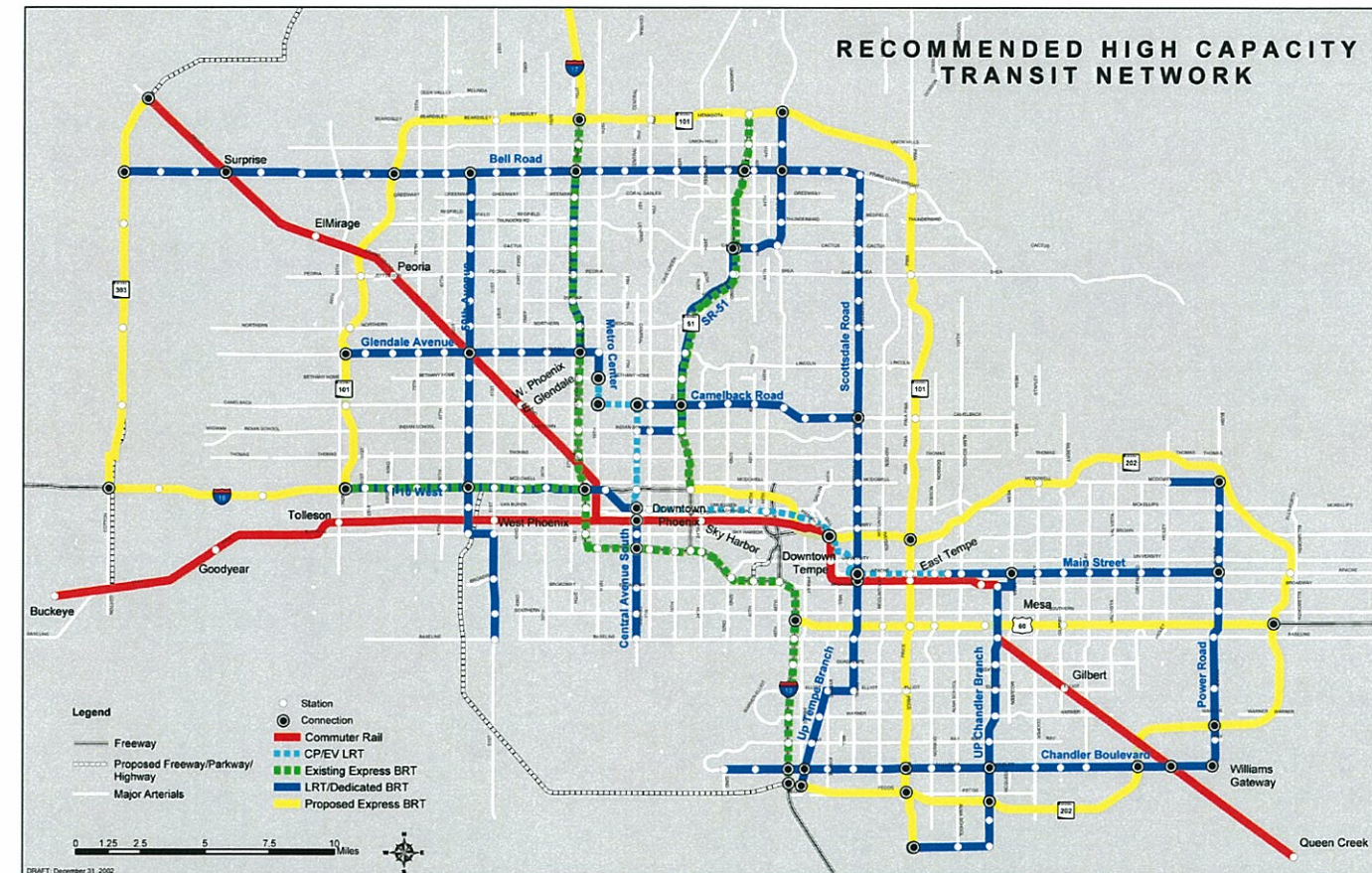
In concert with the HCTP, Valley Metro conducted their *Regional Transit System Study (RTSS)* that was adopted in the summer of 2003. The RTSS recommended improvements to the local bus network, regional connections, freeway BRT routes, bus service on arterial routes, and demand response service (dial-a-ride, rural service). The recommendations of this study were included in the bus transit component of the RTP.

The *MAG Value Lanes Study* was adopted in March 2002. This study recommended the construction of HOV lanes for all freeways within the Maricopa County area, and included recommendations for HOV directional ramp connections at specific freeway-to-freeway traffic interchanges.

Within this segment of the I-10 corridor, HOV directional ramps were recommended at the I-10/SR51/SR202L TI to provide a direct HOV connection between I-10 (to/from the south) and SR51 (to/from the north), and between I-10 (to/from the west) and SR 202L (to/from the east). An HOV directional ramp was also recommended at the I-10/US60 TI to provide a direct HOV

connection between I-10 (to/from the west) to US 60 (to/from the east). Each of these HOV facilities have been constructed by ADOT.

The *Value Lanes Study* has also identified a potential future HOV ramp at the I-10/I-17 (Maricopa) TI to provide a direct HOV ramp connection between I-10 (to/from the east) and I-17 (to/from the west) that would connect to the planned HOV lanes on I-17. An evaluation of this ramp is included in this study. One additional HOV ramp is funded in the RTP at the I-10/SR202L (Santan) TI to provide a direct HOV ramp connection from I-10 (to/from the north) to SR 202L (to/from the east).



Source: MAG High Capacity Transit Plan

Figure 3 – MAG High Capacity Transit Plan Recommendations

MAG also completed their *Park and Ride Lots Location Study*, in January 2001. This study recommended two park and ride lot locations within this segment of the I-10 corridor, including the 40th Street and Pecos Road Park and Ride that has been in operation since December 2002.

A second park and ride lot was recommended near I-10 and Warner Road. However, existing and planned development has precluded the acquisition of the property necessary for a park and ride lot at this location.

Valley Metro currently operates their I-10 East BRT route that originates at the Pecos Road Park and Ride and provides service to the Phoenix central business district. This bus route utilizes the I-10 HOV lanes between the Washington/Jefferson Street TI and Pecos Road. Fourteen inbound (A.M.) and fourteen outbound (P.M.) routes are provided during the morning and evening peak periods.

The Superstition Springs Express route currently originates at the Superstition Springs Mall and provides service to the Phoenix central business district. This route is currently being evaluated for a possible a bus stop at the Arizona Mills Mall. Five inbound (A.M.) and five outbound (P.M.) routes are provided during the morning and evening peak periods.

Valley Metro plans to initiate the Apache Junction Express route in 2010. This future route would originate near US 60 and Signal Butte Road, and would provide service to the Phoenix central business district. This route may include a bus stop at the Arizona Mills Mall.

Valley Metro also plans to initiate the Superstition Freeway Connection in 2011. This future route would originate at the Arizona Mills Mall and provide service along US 60 to the east to destinations in Tempe and Mesa.

Phoenix Sky Harbor International Airport (PSHIA) plans to implement an Automated People Mover (APM) transit system to transport passengers between the METRO 44th Street/Washington Street LRT station and the airport terminals. The APM would eventually be extended to the west to the Rental Car Center with a crossing of I-10 at Mohave Street.

1.3.3 Land Use

The project area is located within portions of the Cities of Phoenix, Tempe, Chandler, and the Town of Guadalupe. No tribal or federal lands exist within the project limits. The land adjacent to the ADOT right-of-way is primarily privately owned or within municipal ownership.

The Arizona State Land Department (ASLD) owns property south of I-17, between 7th and 12th Streets. Phoenix South Mountain Park is also located on state owned land at the southwest corner of 48th Street and Guadalupe Road.

Between SR 51 and 48th Street, the land use within the City of Phoenix is dominated by Phoenix Sky Harbor International Airport (PSHIA), industrial/commercial, and warehouse/distribution land uses with interspersed single-family and multi-family residences. Residential land uses occur north of I-17 between 7th Avenue and 16th Street, west of I-10 near Roosevelt Street, and south of I-10 just west of 48th Street.

The PSHIA Rental Car Center, U.S. Airways Flight Operations Center, Bank One office building, Bank of America office complex, Honeywell, and Arrow Electronics are also located west of I-10 and north of I-17.

The City of Phoenix has adopted the “Beyond the Banks” redevelopment and infill project that parallels the Salt River, west of I-10. This plan encourages new development that will compliment the Rio Salado Project.

A portion of the existing residential development located north of I-17, between 16th Street and 7th Street, is located within the airport noise abatement long-term acquisition area. The land within the airport acquisition area will likely be redeveloped with commercial land uses.

To the south of I-10, at its convergence with I-17, the area is highly industrial with office parks and warehouse/distribution facilities. This land use pattern continues to the east to approximately 44th Street, where residential housing carries over to 48th Street. The Riverpoint development is located south of I-10 and west of 32nd Street. A new University of Phoenix office/education complex is being constructed at this location. The Cotton Center and other commercial, industrial, and warehouse/distribution centers are located south of Broadway Road.

A highly industrial area is present to the north of I-10 between 32nd Street and 48th Street including the Southbank development. This area includes office buildings, warehouse/distribution centers and other commercial land uses. The Radisson Hotel is located north of I-10 and east of 32nd Street. The University of Phoenix and Pepsi Cola Bottling Company are located north of I-10 between 40th Street and SR 143.

The existing land use west of SR 143 that is within Phoenix includes a mix of office buildings, commercial development and hotel facilities. The existing land use east of SR 143 that is within Tempe includes Maricopa Community College, commercial/industrial businesses, and warehouse/distribution facilities.

The segment of I-10 within the City of Tempe includes residential, industrial, commercial retail, office/service, golf courses, cemeteries, and recreational land uses. Major developments include Tempe Diablo Stadium, Arizona Mills Mall, Wyndham Buttes Resort, Fountainhead Business Park, Motorola, Fairmont Commerce Center, Tempe Auto Mall, Coca Cola bottling facility, and IKEA retail center.

Residential develop includes the Meadows Mobile Home Park, Peterson Park neighborhood, Tempe Villages, Galleria Palms apartment complex, and Greenwood Village apartments. Several residential neighborhoods and subdivisions are located adjacent to US 60 including Roosen Place, Southern Palms Units II and III, Knoell Gardens, Rancho Tempe Mobile Home Park, and the Tierra Verde Apartments.

The Town of Guadalupe's northern boundary is located directly south of Baseline Road, on the east side of I-10. Commercial land uses are predominant along Baseline Road between I-10 and Priest Drive. A few small, family owned businesses are interspersed with single-family housing east of I-10, between the Highline Canal and Guadalupe Road.

South of Baseline Road, the I-10 corridor becomes the jurisdictional boundary between the cities of Phoenix, Tempe and Chandler. Newer office parks, retail development and the large residential community of Ahwatukee are located west of I-10 within the City of Phoenix. The Point South Mountain Resort and Golf Course is located between I-10 and the foothills of South Mountain Park.

Commercial and retail land uses dominate the area east of I-10 within the cities of Tempe and Chandler. The Chandler Pavilions Commercial Retail Center, Chandler Auto Mall, IKEA, and several industrial business parks are located east of I-10 between Elliot Road and Chandler Boulevard. No residential communities occur within Chandler adjacent to I-10.

1.3.4 Existing and Planned Recreational Facilities

Three existing parks are located adjacent to the freeway right-of-way within the study area. Green Valley Park is located west of 16th Street and adjacent to the eastbound I-17 frontage road and is operated by the City of Phoenix. The park includes a baseball field and activity center located on the southern portion of the park near Watkins Street.

Tempe Diablo Stadium is located west of I-10 and north of Alameda Drive. The stadium parking lot is immediately adjacent to the I-10 right-of-way. Discussions with representatives of the Tempe Parks and Recreation Department have indicated no new facilities are planned for the parking lot area.

Mountain Vista Park is located west of I-10 and north of Ray Road and is operated by the City of Phoenix.

The Rio Salado Project is a U.S. Army Corps of Engineers (COE) sponsored habitat restoration project that is located adjacent to and within the Salt River between 19th Avenue and 24th Street. The eastern project limit is the Salt River grade control structure located between 24th Street and I-10. The project provides for flood control, flood conveyance, and habitat restoration. A multi-use trail system was developed with the project that includes trails and ramadas within the overbank areas. An equestrian trail was also provided within the river low flow channel, separate from the bike and pedestrian trail.

Pedestrian access is provided to the Rio Salado trail system with grade-separated crossings at 24th Street, 16th Street, 7th Street, Central Avenue, and 19th Avenue. The grade separated crossings are typically depressed beneath each arterial street.

The City of Phoenix and the COE do not have an interest in extending the Rio Salado project further to the east of I-10. Habitat restoration near the airport could introduce the potential for flight hazards between aircraft and birds near the river.

The City of Phoenix conducted a feasibility study for a multi-use pathway along the south bank of the Salt River between 24th Street and Priest Drive to provide a connection between Tempe Town Lake and the Rio Salado project. The Peace Path would be located along the top of the riverbank with undercrossings of the roadway bridges at Interstate 10, SR 153, SR 143 and Priest Drive. This project is currently unfunded.

The City of Tempe has updated their master plan for the Double Butte Cemetery that is located west of I-10 and south of Broadway Road. This facility is managed by the Tempe Parks and Recreation Department, and is the only public cemetery located within the City of Tempe. Approximately 12,000 burial sites have been documented at this cemetery, including former

Senator Carl Hayden and two previous state governors. The cemetery was opened in the 1880's, with the original site located near the center of the north property line. The City plans to submit the cemetery for inclusion in the National Register of Historic Places.

Maricopa County Facilities Management operates the Bell Butte Cemetery located east of I-10 and south of Broadway Road. This cemetery has been used for the indigent population from within Maricopa County. The cemetery is at capacity, and records indicate grave sites are located near the I-10 right-of-way.

At the request of the City of Tempe, ADOT recently conducted a feasibility study for possible future pedestrian/bicycle overpasses at Alameda Drive and the Western Canal. These facilities may be constructed with the I-10 improvements pending funding availability from the City of Tempe.

1.3.5 Phoenix Sky Harbor International Airport

Phoenix Sky Harbor International Airport (PSHIA) is located adjacent to I-10 between the UPRR and the Salt River. PSHIA recently completed an Environmental Impact Statement (EIS) for near-term capital improvements that include an Automated People Mover (APM) transit system, a new west terminal facility, new Terminal 4 concourses, a cross-taxiway, and internal roadway system modifications east of 24th Street.

The APM will initially provide a transit connection between the terminals and the METRO LRT Station at 44th Street and Washington Street. The APM would ultimately be extended to the west to provide a transit connection between the terminals and the Rental Car Center with a crossing of I-10 at Mohave Street.

Phoenix Aviation Department (PAD) is evaluating potential locations for a security plaza complex at the east and west ends of the airport. The west facility would likely be sited east of 24th Street for inbound traffic during high alert periods. The security plaza would be designed with sufficient vehicular capacity to allow traffic to pass through the facility without queuing traffic to the extent that would impact I-10.

PAD is also evaluating options for the west PSHIA entry road system that would incorporate the security plaza, reduce the vehicle speeds of inbound traffic, separate traffic destined for the terminal curbside areas from other destinations within the airport, and to reduce the volume of cut-through traffic through the airport. Recent studies conducted by PAD have indicated that approximately 25% of the total volume of traffic on Sky Harbor Boulevard is cut-through traffic.

Improvements near the airport runways are controlled by a variety of runway airspace requirements and safety zone regulations. The Federal Aviation Administration (FAA) must be notified whenever their FAR Part 77 Runway Approach Surface may be penetrated with new construction planned in the vicinity of an airport, or if a new facility would extend into their Runway Projection Zone (RPZ) safety area. Objects that would penetrate the Part 77 surface or encroach into the RPZ must be evaluated and approved by the FAA.

The existing I-10 westbound roadway currently penetrates the Part 77 Surface and encroaches into the RPZ for the south runway in the vicinity of 24th Street. Therefore, any improvement planned for I-10 in this area must be approved by the FAA with the support of PAD. No impacts are anticipated with the other runways.

The Phoenix Aviation Department Director transmitted a letter to ADOT in August 2005 that included a list of concerns regarding the interface of the I-10 widening alternatives with the west entrance to Phoenix Sky Harbor International Airport (PSHIA). A few of the concerns included the following:

- Access should be retained between I-10, Interstate 17 (I-17) and the west airport entrance;
- The airport access locations should accommodate traffic growth forecasts;
- Consider and accommodate airport security infrastructure and operations;
- Provide easy and intuitive access with direct access points and appropriate signing, both for the east and west airport entrances;
- Reduce non-airport cut-through traffic;
- Minimize encroachments into the airport that could impact the operations of the runways.

The ADOT project team has been meeting regularly with representatives of PAD that has resulted in the development of the west airport access options that are included in this report. The meetings will continue throughout the study process to develop a plan that would be acceptable to ADOT, PAD, FHWA and the FAA that would balance airport access, the ability to implement airport security measures, and sufficiently address runway safety requirements.

PAD is also conducting a study to reconfigure their east airport access (at Sky Harbor Boulevard) connections with SR 143, SR 153, and the SR 202L Connector. The results of this study will include the recommendation to reconfigure the existing interchange to provide a new fully directional interchange will ramp connections between SR 143, Sky Harbor Boulevard, and the SR 202L Connector. SR 153 would be removed from the Regional Freeway System and reclassified to an arterial street under the jurisdiction of the City of Phoenix.

1.3.6 Utilities and Railroad

Railroad Coordination

The Union Pacific Railroad (UPRR) crosses beneath I-10 south of Washington Street. UPRR spur tracks also cross beneath I-17 at 3rd Street and 12th Avenue, and over US 60 east of Kyrene Road.

Existing Utilities

The major existing public utilities that are located within the study limits are presented in Table 1. This inventory of utilities was compiled from quarter-section maps, existing facility plans and as-built drawings that were provided by the local agencies and utility companies.

Table 1 – Existing Utility Crossings

Freeway Corridor	Approx. Station	Facility Owner	Description
I-10	7743+50	City of Phoenix	Storm drain
I-10	7746+15	City of Phoenix	Storm drain
I-10	7748+05	Salt River Project	24" irrigation line
I-10	7749+70	City of Phoenix	6" water line
I-10	7750+50	City of Phoenix	Storm drain
I-10	7752+75	City of Phoenix	Storm drain
I-10	7755+80	City of Phoenix	Storm drain
I-10	7757+65	City of Phoenix	18" storm drain
I-10	7760+45	Arizona Public Service	Overhead power
I-10	7761+05	City of Phoenix	Storm drain
I-10	7761+25	City of Phoenix	6" water line
I-10	7761+30	City of Phoenix	20" water line
I-10	7764+35	City of Phoenix	Storm drain
I-10	7768+35	City of Phoenix	Storm drain
I-10	7773+10	City of Phoenix	Storm drain
I-10	7773+35	City of Phoenix	27" sanitary sewer
I-10	7781+65	Cox Communications	Fiber optic telecommunication
I-10	7781+75	Arizona Public Service	Overhead power
I-10	7786+85	City of Phoenix	12" sanitary sewer
I-10	7786+90	City of Phoenix	15" sanitary sewer
I-10	7787+30	City of Phoenix	12" water line
I-10	7787+35	City of Phoenix	24" water line
I-10	7790+60	Southwest Gas	Gas line
I-10	7795+95	City of Phoenix	8" sanitary sewer
I-10	7797+95	City of Phoenix	12" water line
I-10	7798+15	City of Phoenix	8" sanitary sewer
I-10	7801+85	City of Phoenix	8" water line
I-10	7802+25	City of Phoenix	12" sanitary sewer
I-10	7809+20	City of Phoenix	10" sanitary sewer
I-10	7851+75	Cox Communications	Underground telecommunication
I-10	7859+85	City of Phoenix	12" water line
I-10	7859+90	Qwest	Underground telecommunication
I-10	7859+95	Arizona Public Service	Underground power
I-10	7860+05	City of Phoenix	30" sanitary sewer
I-10	7860+15	Southwest Gas	Underground gas line
I-10	7860+30	Southwest Gas	Underground gas line
I-10	7860+60	Qwest	Underground telecommunication
I-10	7862+75	City of Phoenix	69" sanitary sewer (SROG)
I-10	7891+50	City of Phoenix	12" water line

Table 1 – Existing Utility Crossings (continued)

Freeway Corridor	Approx. Station	Facility Owner	Description
I-10	7891+90	Arizona Public Service	Underground power
I-10	7892+80	Qwest	Underground telecommunication
I-10	7893+65	Qwest	Underground telecommunication
I-10	7896+05	Southwest Gas	Underground gas line
I-10	7934+05	Arizona Public Service	Overhead power
I-10	7969+05	Salt River Project	36" irrigation line
I-10	7970+90	City of Phoenix	15" sanitary sewer
I-10	7971+25	City of Phoenix	12" sanitary sewer
I-10	7971+30	City of Phoenix	12" water line
I-10	7982+85	Arizona Public Service	Overhead power
I-10	7995+60	Arizona Public Service	Overhead power
I-10	7995+75	Southwest Gas	Underground gas line
I-10	7995+80	City of Phoenix	12" water line within 24" steel sleeve
I-10	7995+85	Cox Communications	Fiber optic television
I-10	7996+00	City of Phoenix	60" water line
I-10	7996+05	Qwest	Underground telecommunication
I-10	7996+05	Qwest	Underground telecommunication
I-10	8009+40	Arizona Public Service	Overhead power
I-10	8011+25	Salt River Project	30" irrigation line
I-10	8013+30	City of Phoenix	Storm drain
I-10	8017+30	City of Phoenix	Storm drain
I-10	8020+95	Southwest Gas	Underground gas line
I-10	8021+15	City of Phoenix	6" water line
I-10	8023+00	Qwest	Underground telecommunication
I-10	8023+30	City of Phoenix	15" sanitary sewer
I-10	8023+60	City of Phoenix	Storm drain
I-10	8035+95	Arizona Public Service	Overhead power
I-10	8041+55	Salt River Project	Irrigation line
I-10	8042+20	City of Phoenix	12" water line within 30" steel sleeve
I-10	8045+45	Salt River Project	Irrigation line
I-10	8061+90	Arizona Public Service	Overhead power
I-10	8062+45	Arizona Public Service	Overhead power
I-10	8069+30	Southwest Gas	16" gas line
I-10	8069+35	El Paso Natural Gas	4½" gas line
I-10	8069+40	Salt River Project	Irrigation line
I-10	8076+15	Salt River Project	Irrigation line
I-10	8076+20	City of Phoenix	90" storm drain
I-10	8076+70	City of Phoenix	Storm drain

Table 1 – Existing Utility Crossings (continued)

Freeway Corridor	Approx. Station	Facility Owner	Description
I-10	8100+95	City of Tempe	12" water line
I-10	8123+05	Salt River Project	Underground power
I-10	8130+45	Qwest	Underground telecommunication
I-10	8130+60	City of Tempe	15" sanitary sewer
I-10	8130+65	US West	Underground telecommunication
I-10	8130+70	City of Tempe	18" water line
I-10	8130+80	City of Tempe	24" storm drain
I-10	8143+90	City of Tempe	30" storm drain
I-10	8143+50	City of Tempe	18" sanitary sewer
I-10	8144+00	Salt River Project	Underground power
I-10	8144+05	City of Tempe	18" storm drain
I-10	8144+15	Qwest	Underground telecommunication
I-10	8144+20	Salt River Project	Overhead power
I-10	8156+00	City of Tempe	12" water line
I-10	8157+20	City of Tempe	48" sanitary sewer
I-10	8158+35	Southwest Gas	Underground gas line
I-10	8158+40	Qwest	Underground telecommunication
I-10	8158+45	Qwest	Underground telecommunication
I-10	8176+00	Salt River Project	Underground power
I-10	8176+70	Salt River Project	Underground power
I-10	8177+25	Salt River Project	Western Canal crossing
I-10	8182+40	Salt River Project	Overhead power
I-10	8209+75	Salt River Project	Highline Canal crossing
I-10	8210+20	Salt River Project	Underground power
I-10	8210+25	City of Phoenix	16" water line
I-10	8214+75	Salt River Project	Overhead power
I-10	8223+15	Salt River Project	Overhead power
I-10	8258+50	El Paso Natural Gas	Two 10" high pressure gas lines
I-10	8270+90	Salt River Project	Overhead power
I-10	8430+95	Salt River Project	Overhead power
I-10	8950+40	Salt River Project	Overhead power
I-10	8477+80	Salt River Project	Underground power
I-17	133+55	Arizona Public Service	6" underground power
I-17	134+25	City of Phoenix	8" water line
I-17	134+30	Qwest	6" underground telecommunication
I-17	147+55	City of Phoenix	4" water line
I-17	147+60	Arizona Public Service	Overhead power
I-17	160+70	City of Phoenix	8" sanitary sewer

Table 1 – Existing Utility Crossings (continued)

Freeway Corridor	Approx. Station	Facility Owner	Description
I-17	160+75	Qwest	6" underground telecommunication
I-17	160+80	City of Phoenix	6" water line
I-17	161+15	Cox Communications	Fiber optic television
I-17	174+35	City of Phoenix	10" sanitary sewer
I-17	187+30	City of Phoenix	36" water line
I-17	187+40	Qwest	6" underground telecommunication
I-17	187+45	City of Phoenix	Storm drain
I-17	187+65	City of Phoenix	Storm drain
I-17	187+65	Southwest Gas	Underground gas line
I-17	188+00	Arizona Public Service	Overhead power
I-17	188+10	Qwest	6" underground telecommunication
I-17	189+25	Qwest	6" underground telecommunication
I-17	189+95	Qwest	6" underground telecommunication
I-17	200+40	Arizona Public Service	Underground power
I-17	200+45	Arizona Public Service	Overhead power
I-17	200+70	City of Phoenix	69" sanitary sewer (SROG)
I-17	201+45	City of Phoenix	Water line
SR143	0+35	Cox Communications	Underground cable television
SR143	26+35	Southwest Gas	8" gas line
SR143	26+40	Southwest Gas	8" gas line
SR143	33+85	Salt River Project	Underground power
SR143	33+95	Salt River Project	Overhead power
SR143	34+70	Salt River Project	Overhead power
SR143	37+35	Air Products & Chemicals	6" nitrogen gas line
SR143	40+00	Southwest Gas	8" gas line
SR143	52+70	Cox Communications	Fiber optic television
SR143	53+60	Cox Communications	Fiber optic television
SR143	57+90	Salt River Project	Underground power
SR143	66+65	Salt River Project	Overhead power
SR143	66+75	Salt River Project	Overhead power
SR143	66+85	Salt River Project	Overhead power
SR143	67+70	Salt River Project	Overhead power
SR143	74+70	Salt River Project	Overhead power
SR143	74+75	Qwest	Underground telecommunication
SR143	85+20	Southwest Gas	Underground gas line
US60	48+10	Salt River Project	Overhead power
US60	48+20	Cox Communications	Fiber optic television
US60	48+20	Qwest	Underground telecommunication

Table 1 – Existing Utility Crossings (continued)

Freeway Corridor	Approx. Station	Facility Owner	Description
US60	48+25	City of Tempe	21" water line
US60	48+65	Salt River Project	27" irrigation line
US60	48+70	Salt River Project	27" Irrigation line
US60	74+65	Qwest	Underground telecommunication
US60	74+80	Union Pacific Railroad	Railroad underpass
US60	74+85	Salt River Project	20" irrigation
US60	75+10	Salt River Project	Overhead power
US60	75+70	Salt River Project	Overhead power
US60	88+05	Qwest	Underground telecommunication
US60	88+15	Qwest	Underground telecommunication
US60	120+55	Cox Communications	Fiber optic television
US60	120+60	Salt River Project	Underground power
US60	121+20	City of Tempe	20" water line
US60	121+35	City of Tempe	42" sanitary sewer
US60	121+65	City of Tempe	21" sanitary sewer
US60	121+70	City of Tempe	66" storm drain
US60	121+75	Salt River Project	24" irrigation line
US60	123+30	Salt River Project	Overhead power

An existing Sub-Regional Operating Group (SROG) 69" diameter sanitary sewer was recently relocated in the northwest quadrant of the I-10/I-17 TI. The sewer line passes beneath I-10 just south of Mohave Street, continues to the south and west along the new ADOT right-of-way adjacent to the Rental Car Center, and then crosses I-17 approximately one-half mile east of 16th Street.

Significant existing utility corridors parallel the existing freeways at three locations including the I-17 frontage roads between 16th Street and 7th Avenue, the west and east frontage roads along SR 143 between I-10 and University Drive, and along the I-10 west right-of-way between Diablo Way and the Western Canal.

1.3.7 Drainage

The project corridor has been subdivided into the following three segments for the drainage analysis, including: 1.) I-10 and I-17 north of the Salt River; 2.) I-10 between the Salt River and Guadalupe Road, SR143 between the I-10/SR143 TI and the Salt River, and US 60 between the I-10/US60 TI and Mill Avenue; and 3.) I-10 between Guadalupe Road and Chandler Boulevard. The existing major offsite and onsite drainage systems are depicted in Figure 4 on page 15.

1.3.7.1 Offsite Drainage Systems

Segment 1

Segment 1 is the project area north of the Salt River and is divided into three areas including: I-17 between 7th Avenue and the I-10/I-17 TI, I-10 between Roosevelt Street and the I-10/I-17 TI, and I-10 between 24th Street and the Salt River.

The offsite watershed contributing to the elevated section of I-17 between 7th Avenue and the I-10/I-17 TI is located entirely within the corporate limits of the City of Phoenix. For purposes of this study, the watershed boundary is defined on the south by I-17, on the east by I-10, on the north by the Union Pacific Railroad (UPRR), and on the west by 7th Avenue. The general topography of the watershed is relatively flat. Overland runoff generally flows from the northeast to the southwest and outfalls to the Salt River.

Offsite runoff in this watershed is collected in a culvert crossing I-17 near 11th Street, six local storm drains, and the ADOT West Drainage Tunnel. The local storm drains are located in 7th Avenue, Central Avenue, 3rd Street, 12th Street, and two storm drains in 16th Street. ADOT onsite drainage systems connect to the 11th Street culvert, 3rd Street storm drain, 16th storm drains, and the ADOT West Drainage Tunnel. Storm water runoff in excess of the storm drain capacity may flow through the I-17 embankment at 16th Street, a pedestrian underpass at 12th Street, a railroad underpass near 3rd Street, Central Avenue, and 7th Avenue. The following is a summary of each of the drainage crossings:

- The 11th Street culvert is an 8'x4' reinforced concrete box culvert that extends under I-17 and connects to two 48" reinforced concrete pipes (RCPs) that outfall into the Salt River.
- The 3rd Street storm drain is an 84" RCP at I-17 that continues to the south and outfalls to the Salt River.
- The 16th Street storm drains include 36" and 78" RCPs at the I-17 crossing. The storm drains run parallel to each other until 200' north of Lower Buckeye Road, where the storm drains combine into a 66" diameter trunk line that continues to the south to the Salt River.
- The ADOT West Drainage Tunnel is a 21' diameter tunnel that begins at the I-10 Inner Loop, proceeds south along 2nd Street, and then heads in a southwesterly direction from Lincoln Street. The tunnel proceeds due south to the Salt River from the intersection of Central Avenue and Buckeye Road. The tunnel conveys runoff from the east-west segment of I-10 between 15th Avenue and SR 51. In addition, it collects offsite and onsite runoff at four drop shaft locations along the north-south alignment; that are located at Fillmore Street, Grant Street, Tonto Street, and the Maricopa Freeway (I-17).

The offsite runoff intersecting I-10 between Roosevelt Street and the I-10/I-17 TI is conveyed to the Salt River by the 21' diameter ADOT East Drainage Tunnel that is located in the eastern right-of-way between Moreland Street and Mohave Drive. The offsite watershed area extends north to the Arizona Canal, east to the Papago Buttes and north to Camelback Mountain. The general slope of the land is from northeast to southwest. Runoff enters the tunnel through seven drop structures that are located at Moreland Street, Pierce Street, Van Buren Street, Adams Street, Madison Street, Mohave Street, and Buckeye Road. Offsite runoff is collected in drainage swales

in the eastern right-of-way adjacent to each drop structure. Each swale is drained to the nearest drop structure by a catch basin and storm drain network.

The Phoenix Sky Harbor International Airport (PSHIA) controls offsite runoff intersecting I-10 between 24th Street and the Salt River. Offsite runoff captured in storm drains north of the airport is conveyed under the airport and discharged directly to the Salt River. Runoff generated by the airport is captured in their onsite storm drain systems that are designed for a 5-year storm event. East of 24th Street, offsite runoff from the airport that is in excess of the airport's onsite storm drain systems is collected and conveyed to the east in a drainage ditch along the southern edge of the airport. The airport runoff is collected in the ditch and conveyed east toward the Salt River. At Station 7926+00, water in the ditch passes through a 48" diameter culvert under Old Tower Road. The ditch transitions to a double 72" RCP and outfalls to the Salt River. Between Station 7905+00 and the Salt River, a 90" RCP parallels the open channel described above to discharge onsite drainage collected from the airport to the Salt River.

Segment 2

Segment 2 is the project area along I-10 between the Salt River and Guadalupe Road. It also includes portions of SR143 between the I-10/SR143 TI and the Salt River, and a portion of US 60 between the I-10/US60 TI and Mill Avenue.

The offsite watershed contributing to this segment has a western boundary generally along 32nd Street; southern boundary along the peaks of South Mountain Park, Guadalupe Road, and US 60 to approximately Mill Avenue; the eastern boundary is the Price Freeway; and the northern boundary is along a ridgeline that is approximately one-half mile south of and parallel to the Salt River. The majority of offsite and onsite runoff from I-10 and the watersheds surrounding this segment of I-10 drains to the Tempe Drain for discharge into the Salt River. Areas north of the Tempe Drain generally flow from the northeast to southwest, while areas south of the Tempe Drain flow from the southeast to the northwest.

The Tempe Drain is a trapezoidal channel (concrete and rip rap lined) that originates near 52nd Street and extends to the west to the Salt River. Bridges span the Tempe Drain at the SR143, 40th Street, and 44th Street. The Tempe Drain passes under 32nd Street through a multi-barrel culvert. A hydraulic analysis indicates that the Tempe Drain does not have sufficient capacity to convey the existing 50- or 100-year peak discharges under the SR143 crossing or through the multi-barrel culvert at 32nd Street. The Tempe Drain has capacity to convey the 50-year runoff and the 100-year runoff with no freeboard between 32nd Street and the Salt River.

Offsite runoff intersecting I-10 between Guadalupe Road and Baseline Road is intercepted by the Guadalupe Floodwater Retarding Structure, which is designed to retain the 100-year storm event. Between Baseline Road and the Salt River, catch basins and swales adjacent to I-10 capture offsite flow.

Offsite runoff generated within the watersheds surrounding this segment is collected and conveyed by the 48th Street and the Broadway Road storm drains that are summarized as follows:

- The 48th Street storm drain extends north on 48th Street between Baseline Road and the Tempe Drain. The 48th Street storm drain collects offsite runoff from the drainage area between I-10 on the east and 48th Street on the west, and between Baseline Road on the south and Broadway Road on the north. In addition, it also collects runoff generated in the area between the South Mountain crest on the south, I-10 on the east, Baseline Road on the north, and 40th Street on the west.
- The Broadway Road storm drain is a 96" trunk line that runs along Broadway Road and has laterals along 32nd and 40th Streets. It collects and conveys runoff between Broadway Road on the north, 40th Street on the east, the peaks of South Mountain on the south, and 32nd Street on the west and discharges it into the Salt River, downstream of the I-10 crossing.

Segment 3

Segment 3 is the project area along I-10 between Guadalupe Road and approximately Chandler Boulevard. Offsite runoff intersects I-10 from the west between Guadalupe Road and Ray Road. South of Ray Road, offsite flows are parallel to I-10. The offsite area has been divided into the northern and southern regions. Offsite runoff generated in the northern region intersects I-10 from the west and outfalls to the ADOT Retention Pit (located on the east side of I-10 just south of Warner Road). The ADOT Retention Pit was the I-10 borrow pit that now serves as a storm water retention basin. Offsite runoff generated in the southern region outfalls to the 48th Street Basin, located at 48th Street and the Santan Freeway.

Between Guadalupe and Ray roads, offsite runoff enters the western right-of-way through open channels, openings in sound walls, or overflow from private retention basins. Runoff in the western right-of-way either enters a cross culvert directly or passes through a series of linear detention basins, owned by ADOT or privately held, before entering the nearest cross culvert. Twenty three cross culverts convey runoff from the western right-of-way under I-10 into the eastern right-of-way. North of Elliot Road, the runoff will either be collected in ADOT linear retention basins or the Tempe Improvement District No. 140 detention basins. Runoff discharging from cross culverts between Elliot and Warner Roads is collected in the Tempe Storm Water Diversion System, which is an underground box culvert on the east side of I-10 that begins south of Elliot Road and ends at the ADOT Retention Pit Channel. Runoff exiting cross culverts between Warner Road and the ADOT Retention Pit will enter either the ADOT Retention Pit Diversion Channel or a 12' concrete trapezoidal channel that drains into the ADOT Retention Pit.

South of Ray Road, the natural drainage path changes from southeasterly to southerly. Consequently, the only offsite flows that will enter the right-of-way south of Ray Road will be emergency overflow from private retention basins adjacent to I-10. This offsite flow is moved south in an open channel within the western right-of-way.

1.3.7.2 Onsite Drainage Systems

Segment 1

Between 7th Avenue and the I-10/I-17 TI, the area west of 9th Street contributes to the 3rd Street storm drain. The area between 15th Street and 9th Street contributes to the cross culvert at 11th Street, and the area between the I-10/I-17 TI and 16th Street contributes to the 16th Street storm drains.

The project area contributing to the 3rd Street storm drain begins on I-17 near 9th Street at the high point of a crest vertical curve (Station 146+00) and extends 700' to the west of 7th Street (Station 127+00). The runoff from the area is collected by two trunk lines including an 18" storm drain on the north side of I-17 that drains the northbound frontage road, 7th Street Ramp C, and the northern half of the 7th Street underpass. A south trunk line ranges in size from 18" to 24" in diameter and drains the north and southbound I-17 mainline, a portion of the southbound frontage road, 7th Street Ramp D, and the southern half of the 7th Street underpass.

The portion of I-17 that drains to the 11th Street Culvert begins at 15th Street (Station 181+30) and extends to the west to 9th Street (Station 146+00). Four trunk lines discharge into the 8'x4' RCBC at Station 153+50. The southwest trunk line varies between 12" and 18" and parallels I-17 along the south side of the southbound frontage road. This system drains the southbound I-17 mainline and frontage road between Stations 146+70 and 152+50. The southeast trunk line varies between 12" and 18" and parallels I-17 along the north side of the southbound frontage road. This RCP trunk line drains the southbound I-17 mainline, a portion of the northbound mainline, and the southbound frontage road between Station 152+50 and Station 176+20. The northwest trunk line is an 18" diameter pipe that drains the northbound I-17 mainline and northbound frontage road between Station 149+50 and Station 154+20. The northeast trunk line varies between 18" and 24" and drains the northbound frontage road and portions of the I-17 mainline from Station 154+20 to Station 181+30.

The portion of I-10 draining to the 16th Street storm drain begins at 24th Street and extends to the west to 16th Street. The contributing watershed includes portions of the I-10 mainline from 16th Street to 24th Street, the I-10/I-17 TI ramps, and the I-17 mainline from the TI west to a point approximately 600' west of 16th Street. Runoff is conveyed through a pump station, series of basins, open channels, and storm drains to the 16th Street storm drains. The 36" and 78" storm drains in 16th Street extend to the south parallel to each other until approximately 200' north of Lower Buckeye Road. At this point, the storm drains combine into a 66" RCP that continues to the south to the Salt River. A hydraulic analysis of the 16th Street storm drains indicate that offsite flow causes both storm drains to flow full for storm events greater than the 2-year event.

Onsite runoff from I-10 between I-10/SR51/SR202L TI near Roosevelt Street and the I-10/I-17 TI is collected by catch basins that either discharge to drainage swales adjacent to the drop structures or connect directly to storm drains that outfall to the adjacent drop structure.

Onsite runoff from I-10 between 24th Street and the Salt River is collected by a dual storm drain and open channel system. Catch basins and laterals collect storm water runoff from the

westbound I-10 mainline and discharge it to an open channel on the northern side of I-10 for conveyance to the Salt River. The channel discharges into the Salt River through two 72" RCP culverts. Catch basins and laterals are located along the southern edge of the I-10 collect runoff from the eastbound I-10 mainline. These laterals discharge to an open channel along the south side of I-10 and transitions into a 36" RCP before discharging directly into the Salt River.

Onsite runoff from the Salt River Bridge is intercepted by a series of deck drains located along the outside of the westbound and eastbound lanes. The scupper outlet pipes are 6" diameter galvanized steel pipes that pass through the bridge deck and discharge directly to the Salt River.

Segment 2

The current onsite drainage system for I-10 between the Salt River and Guadalupe Road is comprised of storm drains connecting a series of onsite storage basins and open channels that collect and route storm water runoff from the roadway to the Tempe Drain for outfall to the Salt River. The trunk lines were designed for a 10-year return period, while the detention basins were designed to accommodate the 50-year, 6-hour storm event.

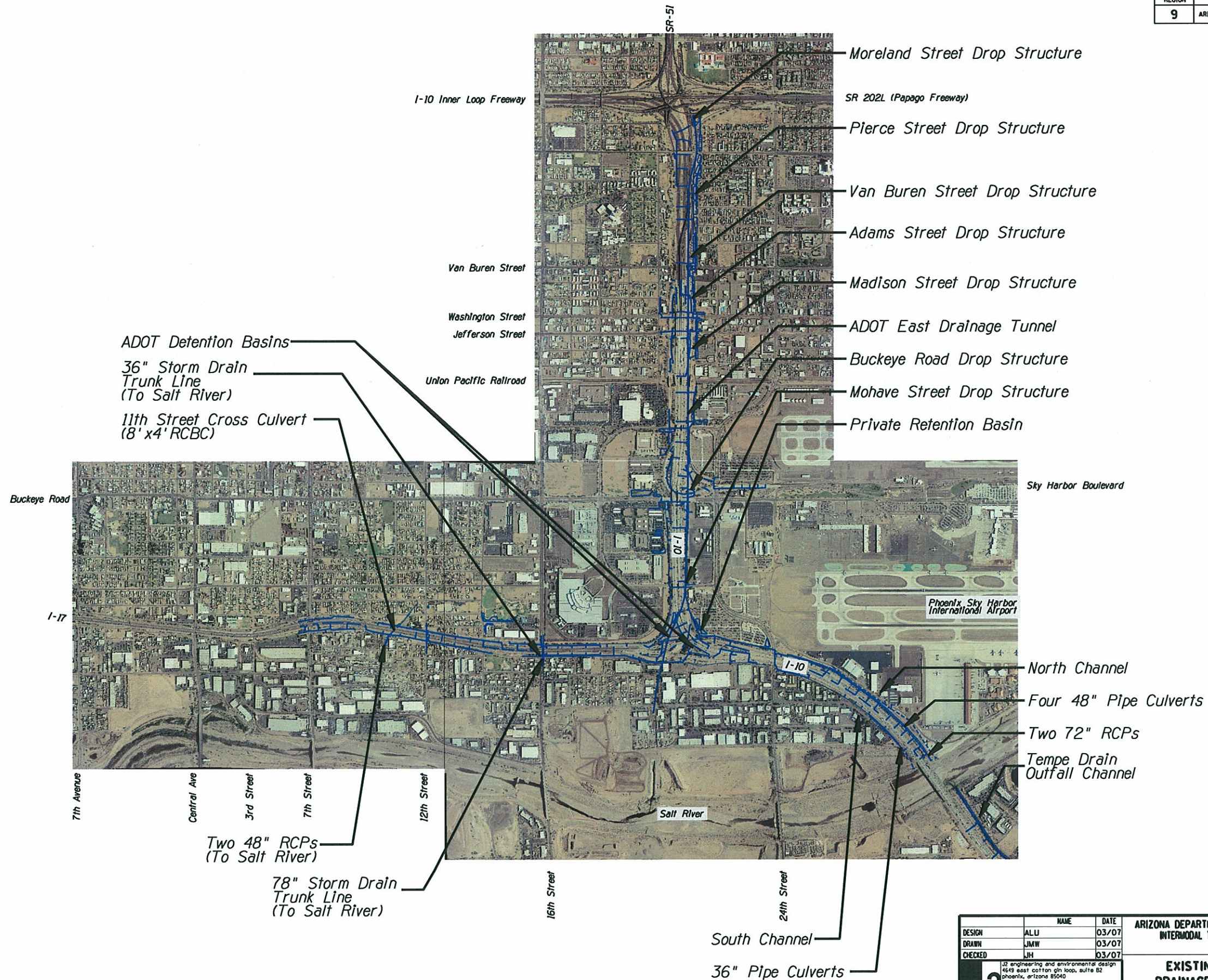
The eastbound and westbound I-10 mainline is drained by catch basins and laterals. Where there is no existing curb and gutter, onsite runoff drains into adjacent roadside swales or onsite storage basins. Trunk lines direct runoff to detention basins or the Tempe Drain. The existing trunk lines and their capacities are as follows:

Table 2 – Existing Storm Drain Pipe Capacity (Segment 2)

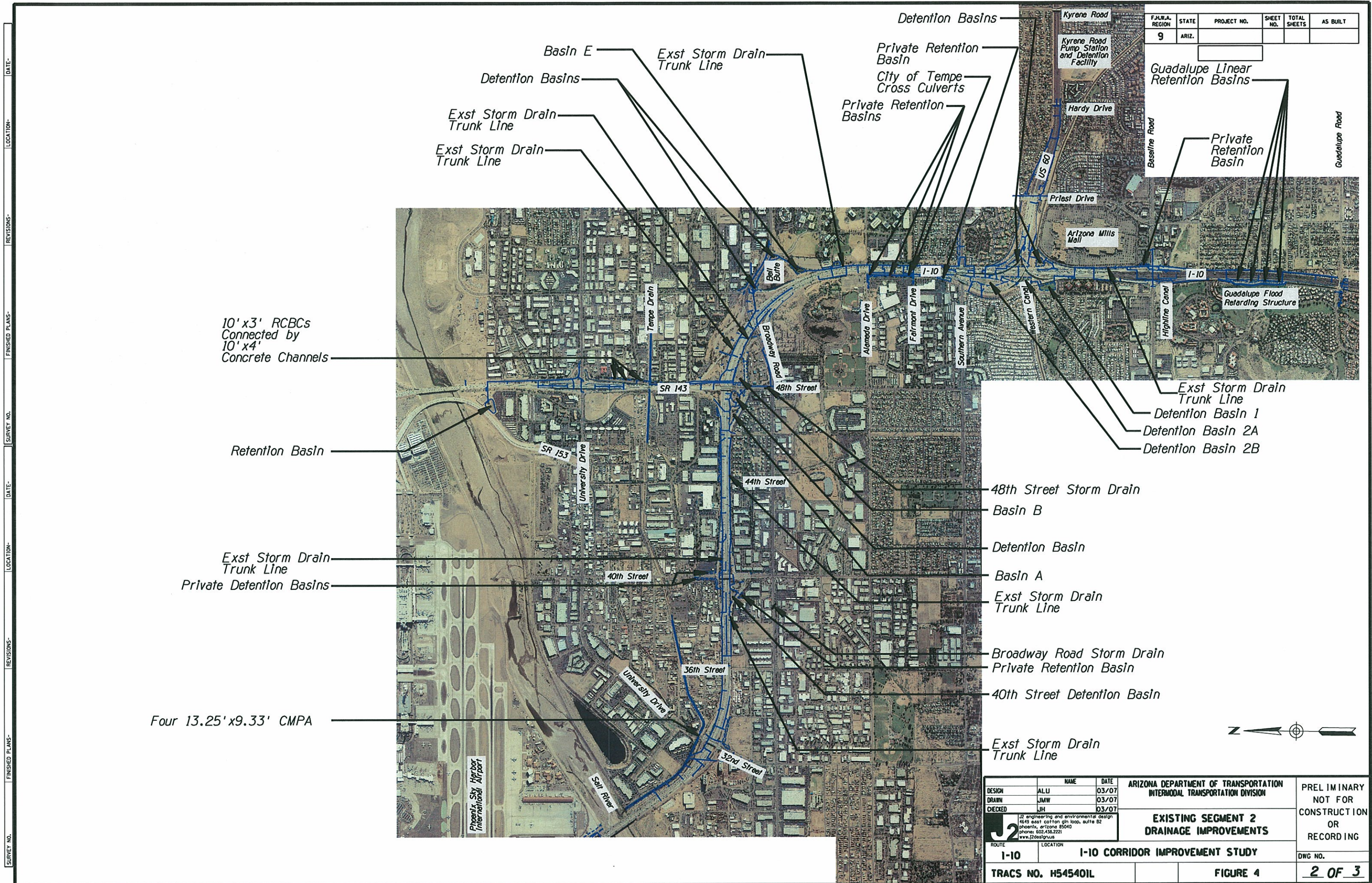
Description	Size (in)	Slope (ft/ft)	Pipe Full Capacity (cfs)
North Trunk Line; Baseline Road to Basin 1	66	0.003000	184
North Trunk Line; Southern Avenue to Basin E	60	0.001000	82
North Trunk Line; Broadway Road to Tempe Drain	54	0.002364	96
North Trunk Line; 48th Street to 44th Street	42	0.001818	43
North Trunk Line; 44th Street to 40th Street	48	0.003636	87
North Trunk Line; 40th Street to 36th Street	54	0.002857	105
North Trunk Line; 36th Street to 32nd Street	60	0.002500	130
North Trunk Line; 32nd Street to Tempe Drain	66	0.003000	184
South Trunk Line; Broadway Road to Basin B	42	0.000638	25
South Trunk Line; 48th Street to 44th Street	30	0.001667	17
South Trunk Line; 44th Street to 40th Street	36	0.003333	38
South Trunk Line; 40th Street to 36 th Street	30	0.003333	24
South Trunk Line; 40th Street to North Trunk Line	30	0.004000	26

DATE- LOCATION- REVISIONS- FINISHED PLANS- SURVEY NO. DATE- LOCATION- REVISIONS- FINISHED PLANS- SURVEY NO.


F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DRAWN	ALU	03/07	EXISTING SEGMENT 1 DRAINAGE IMPROVEMENTS	DWG NO. 1 OF 3
CHECKED	JH	03/07		
J2 engineering and environmental design 4649 east cotton gin loop, suite B2 phoenix, arizona 85040 phone: 602.438.2221 www.j2designus.com				
ROUTE I-10		LOCATION I-10 CORRIDOR IMPROVEMENT STUDY		
TRACS NO. H545401L		FIGURE 4		



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DESIGN	ALU		03/07		
DRAWN	JMW		03/07		
CHECKED	JH		03/07	EXISTING SEGMENT 2 DRAINAGE IMPROVEMENTS	
 J2 engineering and environmental design 4645 east cotton gin loop, suite B2 phoenix, arizona 85040 phone: 602.438.2221 www.j2designus.com					
ROUTE		LOCATION		I-10 CORRIDOR IMPROVEMENT STUDY	
I-10					
TRACS NO. H545401L				FIGURE 4	<u>2 OF 3</u>

Detention basins are located in the I-10/SR143 TI, the I-10/US60 TI, and on the west side of I-10 just north of Guadalupe Road. These basins are designed to attenuate onsite peak discharges to the Tempe Drain. Onsite runoff generated by the I-10 mainline between the I-10/US60 TI and 48th Street is detained by five detention basins within the I-10/SR143 TI. Storm water runoff contributing to the I-10/US60 TI drainage system is routed through five detention basins within the interchange to provide the necessary attenuation prior to discharge into the downstream storm drain system. On the west side of I-10 and north of Guadalupe Road, there is a series of four linear detention basins called the Guadalupe Linear Detention Basins that reduce the onsite peak flow from I-10 between Station 8231+00 and Guadalupe Road.

South of the University Drive TI Drainage along SR 143 is discharged to the Tempe Drain. Drainage north of the University TI discharges to a retention facility adjacent to a levee along the south side of the channelized section of the Salt River. A concrete channel along the eastern side of SR 143 collects onsite runoff from the University TI to the north. South of University Drive, onsite runoff is captured in catch basins and swales that direct the runoff into a series of 10'x4' concrete channels and a 10'x3' RCBC along the east side of SR 143 for outfall into the Tempe Drain. Runoff collected in catch basins along the SR 143 mainline between I-10 and the Tempe Drain connect to a 102" diameter trunk line along the east side of SR 143 that outfalls into the Tempe Drain.

Between the I-10/US60 TI and Mill Avenue, the US 60 onsite drainage is collected and conveyed in two trunk lines that are located along the north and south sides of the freeway. The trunk lines vary in size from 24" to 36" in diameter. Near Station 139+00, the northern trunk line crosses to the south across US 60 and combines with the south trunk line that continues to the east and discharges into the Kyrene Road Pump Station and Detention Facility.

Segment 3

In Segment 3 between Guadalupe Road and Chandler Boulevard, the I-10 general-purpose lanes drain to the outside. The HOV lanes and median drain toward the inside shoulder. No curb and gutter is provided along the outside shoulder between Guadalupe Road and the Ray Road TI. Curb and gutter is provided between the Ray Road TI and Chandler Boulevard.

The onsite drainage system in this segment is composed of catch basins, storm drains, roadside swales, open channels, and onsite storage basins that are summarized as follows:

- Catch basins and storm drains collect runoff from the median and HOV lanes between Guadalupe Road and the Ray Road TI. Storm drain laterals extend from the catch basins to cross culverts and onsite storage basins. South of the Ray Road TI, catch basins are located along the outside shoulders. A storm drain begins at Station 8441+25 and conveys the runoff from the I-10 mainline to the south and drain discharges into the I-10/202L TI offsite drainage channel south of Chandler Boulevard.
- Roadside swales collect onsite runoff from the general-purpose lanes where there is no curb and gutter. The swales outlet into nearby cross culverts and onsite storage basins.
- An open channel that is located within the western right-of-way between Ray Road and the 48th Street Basin accepts runoff from two cross culverts near Ray Road, and emergency

overflows from private detention basins adjacent to the western right-of-way between Ray Road and Chandler Boulevard.

- Onsite storage basins collect runoff from the general-purpose lanes in locations where there is no curb and gutter. The basins also collect runoff from roadside swales and cross culverts. There are approximately 53 basins located adjacent to I-10 and within the Elliot, Warner and Ray Road TIs infield areas. Basins in the western right-of-way overflow to the eastern basins through cross culverts. Basins in the eastern right-of-way overflow into the City of Tempe Improvement District No. 140 detention basins, the Tempe Storm water Diversion System, or the ADOT Retention Diversion Channel or Pit. The total storage volume of the existing ADOT basins was estimated to be approximately 14 acre-feet (this is approximately equivalent to the 2-year, 6-hour storm event).

1.3.8 Right-Of-Way

The existing ADOT right-of-way width varies along the I-10 corridor throughout the study area. The total right-of-way width varies from approximately 300' to 800'. The existing right-of-way width varies along I-17 from 275' to 500', along SR 143 from 170' to 400', and along US 60 from 300' to 600'.

The Department has acquired the ultimate I-10 and I-17 right-of-way north of I-17 and west of I-10. This acquisition was conducted in cooperation with the development of the Rental Car Center and the Bank One office building. Advance acquisition is being conducted for a few additional properties on a case-by-case basis.

The City of Chandler has reserved approximately 50' of open space adjacent to the I-10 corridor for future I-10 freeway expansion. This open space is limited to the I-10 frontage between Ray Road and the Chandler city limits.

The Maricopa Community College is located north of I-10 and east of SR 143. Their existing surface parking is located within the ADOT right-of-way by a lease agreement with ADOT.

The ADOT Phoenix Maintenance District currently operates a maintenance yard south of I-10, east of 48th Street, and north of Broadway Road.

1.3.9 Structures

1.3.9.1 Bridge Structures

The existing bridge structures within the project limits were built between the years of 1961 and 2002. The sufficiency of bridge vertical clearances is summarized in the AASHTO Controlling Criteria Report. A summary of the existing bridges within the study area is provided in Table 3.

A bridge widening project is currently underway at the Ray Road TI Underpass. The vertical clearance shown for the Ray Road TI Underpass does include the widening of the underpass with the current project, although the final construction plans indicate the calculated vertical clearance would be 16'-3".

The METRO crossing of I-10 is currently being constructed at the Washington/Jefferson Street TI. Field verification of the vertical clearances at these structures will also be required with the final design.

Table 3 – Existing Bridge Summary

Structure Number	Route/ Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
1978	I-10, 147.92	Van Buren Overpass, Eastbound	Cast-in-place post-tensioned concrete box girder; Stub abutments on drilled shaft foundations	18.05'
1983	I-10, 147.92	Van Buren Overpass, Westbound		17.51'
1979	I-10, 148.13	Washington/Jefferson TI Overpass, (Eastbound and Westbound)		16.74' WB
1988	I-10, 148.40	SPRR Access Road Overpass, Southbound	Precast prestressed concrete AASHTO Type V Modified girders;	24.15'
1989	I-10, 148.40	SPRR Access Road Overpass, Northbound	Stub abutments and piers on drilled shaft foundations	24.31'
1981	I-10, 148.41	SPRR Overpass, Eastbound	Precast prestressed concrete AASHTO Type VI girders; Stub	23.13'
1982	I-10, 148.41	SPRR Overpass, Westbound	Abutments on drilled shaft foundations located behind MSE retaining wall	23.00'
1985	I-10, 148.61	Grant Street Overpass, Eastbound	Cast-in-place post-tensioned concrete box girder; Partial-height abutments on shear blocked drilled shaft cap; Piers on spread footings.	15.11'
1986	I-10, 148.61	Grant Street Overpass, Westbound	Cast-in-place post-tensioned concrete box girder; Partial-height abutments on shear blocked drilled shaft cap; Piers on spread footings.	15.91'
1990	I-10, 148.89	Buckeye Road Overpass, Eastbound	Cast-in-place post-tensioned concrete box girders; Partial-height abutments on dual row of drilled shaft foundations; Pier on spread footing	17.70'
1991	I-10, 148.90	Buckeye Road Overpass, Westbound	Cast-in-place post-tensioned concrete box girder; Partial-height abutments on single row of drilled shaft foundations; Pier on spread footing	16.47'
2031	I-10, 149.11	Sky Harbor 24 th Street Overpass, Westbound (formerly 22 nd Street)	Cast-in-place post-tensioned concrete box girders; Partial height abutments on drilled shaft foundations.	16.49'
2032	I-10, 149.11	Sky Harbor 24 th Street Overpass, Eastbound (formerly 22 nd Street)	Note: Abutment 1 is on a single row of shafts, and Abutment 2 is on a dual row of shafts.	15.83'
1987	I-10, 149.20	Sky Harbor Airport Return Overpass (formerly 24 th Street)	Precast prestressed concrete AASHTO Type V girders; Stub Abutment 1 on a single row of straight steel piles and a single row of battered steel piles; Stub Abutment 2 on columns and spread footings; Piers on spread footings	15.59'

Table 3 – Existing Bridge Summary (continued)

Structure Number	Route/ Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
1992	I-10, 149.30	Sky Harbor Circle Overpass Eastbound (formerly Mohave Street)	Precast prestressed concrete AASHTO Type V girders; Integral abutments on a single row of straight steel piles	17.92'
1993	I-10, 149.30	Sky Harbor Circle Overpass, Westbound (formerly Mohave Street)		15.63'
1996	I-10, 149.47	SB17-EB10 Ramp Level 2	Cast-in-place post-tensioned concrete box girders; Partial-height abutments on spread footings	26.16'
1995	I-10, 149.51	WB17 over SB17-WB10	Cast-in-place post-tensioned concrete box girders; Partial-height abutments on spread footings	17.64'
1994	I-10, 149.53	EB10 over SB17-WB10	Cast-in-place post-tensioned concrete box girders; Partial-height abutments on spread footings	23.80'
1997	I-10, 149.57	WB10-NB17 Ramp Level 3	Cast-in-place post-tensioned concrete box girders; Stub abutments on drilled shaft foundations; Piers 1 and 2 on groups of drilled shafts; Piers 3 and 4 on spread footings	16.77'
2000	I-10, 149.91	24 th Street Overpass	Precast prestressed concrete AASHTO Type VI girders; Partial-height abutments on dual row of drilled shaft foundations	17.85'
2003	I-10, 150.72	Salt River Bridge EB & WB	Precast prestressed concrete AASHTO Type VI and Type VI Modified girders; Stub abutments and piers on drilled shaft foundations	N/A
2004	I-10, 151.49	University Drive TI Underpass	Precast prestressed concrete AAHTO Type VI girders; Partial-height abutments on a single row of alternating battered and straight steel piles and another row of straight steel piles. Widened structure is identical.	17.88'
2190	I-10, 152.08	40 th Street TI Underpass	Steel girder bridge; Stub abutments on drilled shaft foundations; Pier on spread footings	16.03'
1210	I-10, 153.04	48 th Street Underpass	Steel girder bridge; Stub abutments on a single row of alternating battered and straight steel piles; Piers on spread footings	16.01'
1284	I-10, 153.10	I-10 Off Ramp Underpass, Northbound	Precast prestressed concrete AASHTO Type II girders; Stub abutments on alternating battered and straight steel piles; Piers on spread footings. Widening consists of an identical superstructure with drilled shafts foundations at abutments	16.61'
1211	I-10, 153.47	Broadway Road TI Underpass	Steel girder bridge; Stub abutments on single row of alternating battered and straight steel piles; Piers on spread footings	16.98'

Table 3 – Existing Bridge Summary (continued)

Structure Number	Route/Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
1144	I-10, 154.62	Southern Avenue Overpass (EB)	Cast-in-place reinforced concrete box girders with hinges in second span; Integral abutments on a single row of straight steel piles; Piers on spread footings. Most recent widening consists of a reinforced concrete box with a drop-in precast prestressed concrete box beam section over Southern Avenue; Stub abutments and piers on drilled shaft foundations	16.79'
2305	I-10, 154.62	Ramp S-E Over Southern Avenue	Precast prestressed concrete AASHTO Type VI Modified girders; Partial-height abutments on dual row of drilled shaft foundations located behind planter wall	15.84'
2777	I-10, 154.62	Southern Avenue Overpass (WB)	Cast-in-place reinforced concrete box girders with hinges in second span; Integral abutments on a single row of straight steel piles; Piers on spread footings. Widening consists of an identical superstructure and substructure.	15.33'
2702	I-10, 154.62	HOV Southern Avenue Overpass	Precast prestressed concrete box beams; Stub abutments and piers on drilled shaft foundations. Note: bridge was built between the removed portions of the original Southern Avenue HOV overpass.	15.84'
2347	I-10, 154.93	Ramp S-E Over I-10	Cast-in-place post-tensioned concrete box girders; Stub abutments and piers on drilled shaft foundations	17.24'
2368	I-10, 155.00	WB60-EB10 Ramp	Cast-in-place post-tensioned concrete box girders; Partial height abutments and piers on drilled shaft foundations	17.13' (over structure No.2700; the I-10 to US 60 HOV Ramp)
2367	I-10, 155.01	Ramp NE Over Western Canal	Precast prestressed concrete AASHTO Type IV girders; Stub abutments on drilled shaft foundations	N/A (As-built note a 3'-4" minimum vertical clearance to top of canal bank)
5411	I-10, 155.01	Western Canal RCB	2 cell, 14' x 5' x 383' reinforced concrete box culvert with approximately 7' of fill	N/A
2700	I-10, 155.14	I-10 to US 60 HOV Ramp	Precast prestressed concrete AASHTO Type VI Super girders; Stub abutments on drilled shaft foundations behind MSE walls; Piers on drilled shaft foundations (two piers are post-tensioned straddle bents)	17.16'
2348	I-10, 155.64	Baseline Road TI Overpass Westbound CD	Cast-in-place post-tensioned concrete box girders; Full-height abutments on spread footings	17.64'
2349	I-10, 155.64	Baseline Road TI Overpass	Cast-in-place post-tensioned concrete box girders; Full-height abutments on spread footings	17.11'

Table 3 – Existing Bridge Summary (Continued)

Structure Number	Route/Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
2725	I-10, 155.65	Guadalupe Road Underpass	Precast prestressed concrete AASHTO Type VI girders; Stub abutments on drilled shaft foundations; Pier on spread footing.	16.37'
5414	I-10, 157.68	RCB	2 cell, 10' x 4' x 933' reinforced concrete box culvert with approximately 10' of fill	N/A
2306	I-10, 157.69	Elliot Road TI Underpass	Precast prestressed concrete AASHTO Type VI Modified girders; Partial-height abutments and pier on drilled shaft foundations	16.67' (posted clearance, measured clearances not available at this time)
5416	I-10, 158.06	RCB	2 cell, 10' x 3' x 260' reinforced concrete box culvert with approximately 5' of fill	N/A
5418	I-10, 158.35	RCB	2 cell 10' x 4' x 268' reinforced concrete box culvert with approximately 3' of fill	N/A
5420	I-10, 158.65	RCB	2 cell 10' x 5' x 631' reinforced concrete box culvert with approximately 2' of fill	N/A
6792	I-10, 158.65	RCB	4 cell 10' x 8' x 274' reinforced concrete box culvert with approximately 30' of fill	N/A
2016	I-10, 158.69	Warner Road TI Underpass	Precast prestressed concrete AASHTO Type VI Modified girders; Partial-height abutments on dual row of drilled shaft foundations; Pier on spread footings	17.20'
2017	I-10, 159.70	Ray Road TI Underpass	Precast prestressed concrete AASHTO Type VI Modified girders; Partial-height abutments on dual row of drilled shaft foundations; Pier on spread footings	16.67'; Note: this structure is currently being widened; vertical clearance data is based on existing bridge.
2721	I-10, 160.87	Chandler Boulevard TI Underpass, Eastbound	Precast prestressed concrete AASHTO Type III girders; Partial-height abutments on dual row of drilled shaft foundations; Piers on drilled shafts	17.0' (approximate vertical clearance as noted by ADOT Bridge Maintenance)
2722	I-10, 160.87	Chandler Boulevard TI Underpass, Westbound		
731	I-17, 195.08	16 th Street Overpass	Precast prestressed concrete AASHTO Type II girders; Full-height abutments and pier on spread footings; Median closure widening matched existing structural types except pier is on drilled shaft foundations	14.27'
NA**	195.88 (+/-)	Pedestrian Underpass [12th Street]	Reinforced concrete box pedestrian underpass	8'
729	I-17, 196.11	7 th Street Overpass	Precast prestressed concrete AASHTO Type II girders; Full-height abutments and pier on spread footings; Median closure widening matched existing structural types except pier is on drilled shaft foundations	15.20'

Table 3 – Existing Bridge Summary (Continued)

Structure Number	Route/ Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
727	I-17, 196.38	3 rd Street RR Overpass	Precast prestressed concrete AASHTO Type II girders; Stub abutments on single row of alternating battered and straight steel piles; Piers on spread footings; Median closure matched existing structural types except pier is on drilled shaft foundations	23.57'
725	I-17, 196.64	Central Avenue Overpass	Steel girder bridge; Full height abutments on spread footings; Median closure matched existing structural types.	14.13'
723	I-17, 196.90	7 th Avenue TI Overpass	Precast prestressed concrete AASHTO Type II girders; Full height abutments on dual row of battered steel piles and single row of straight steel piles; Piers on dual row of straight steel piles; Median closure matched existing structural types except pier is on drilled shaft foundations	15.22'
1801	SR 143, 0.40	Tempe Drain #2 Bridge	Precast prestressed AASHTO Type BI-48 beams; Partial-height abutments on spread footings; Widening consists of identical superstructure and substructure types	N/A
1802	SR 143, 0.40	Tempe Drain #2 Bridge West Frontage Road	Precast prestressed AASHTO Type SIII-48 beams; Partial-height abutments on spread footings	N/A
2005	SR 143, 0.76	University Drive TI Overpass	Cast-in-place post-tensioned concrete box; Full-height abutments on dual row of battered steel piles and single row of straight steel piles	16.67'
6958	SR 143, 1.07	RCB	3 cell 16' x 14' x 223' reinforced concrete box culvert with approximately 6' of fill	N/A
2182	SR 143, 1.37	Salt River Bridge	Precast prestressed concrete AASHTO Type VI girders; Stub abutments and piers on drilled shaft foundations	N/A
2350	US 60, 172.37	Priest Drive Eastbound Overpass	Precast prestressed concrete AASHTO Type VI Modified girders; Full-height abutments on dual row of drilled shafts. Bridge widening matched existing structural features.	17.41'
2351	US 60, 172.37	Priest Drive Westbound Overpass	Precast prestressed concrete AASHTO Type VI Modified girders; Full-height abutments on dual row of drilled shafts	17.32'
1376	US 60, 172.90	Hardy Drive Underpass	Cast-in-place conventionally reinforced concrete box; Partial height abutments and pier on spread footings	15.50'

Table 3 – Existing Bridge Summary (Continued)

Structure Number	Route/ Milepost	Structure Name	Superstructure And Foundation Type(s)	Minimum Vertical Clearance (ft)
1378	US 60, 173.42	Kyrene Road Underpass	Cast-in-place conventionally reinforced concrete box; Full-height abutments and pier on spread footings	19.66'
1377	US 60, 173.43	Kyrene SPRR Underpass (now UPRR)	Precast prestressed non-standard box girders; Full-height abutments and pier on spread footings	18.75'
1393	US 60, 173.65	Mill Avenue TI Underpass	Cast-in-place conventionally reinforced concrete box; Stub abutments and pier on spread footings	16.58'

1.3.9.2 Retaining Walls

A review of the as-built plans indicate the majority of the existing retaining walls were built with spread footing foundations. Mechanically Stabilized Earth (MSE) walls were used for the majority of the retaining walls at the I-10/US60 TI. Several soil nail walls were used along the US60 corridor as well as the 40th Street and 48th Street underpasses.

Existing wall types and locations are listed in Table 4. As-built stationing data is shown in the tables unless noted otherwise.

Table 4 – Existing Retaining Walls

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; SPRR Access Road Overpass Northbound [Now UPRR]	Walls located along outside embankment toe between Stations 7806+10 and 7812+22	MSE wall
I-10; SPRR Overpasses (I-10 EB & WB) [Now UPRR]	Walls located between EB and WB structures at each abutments at Stations 7812+33 and 7813+50; a pair of tiered walls are located between the overpasses at Stations 7812+26 and 7813+56; walls also located along the edge of I-10 at all four corners: <ul style="list-style-type: none">NW wall from Station 7811+64 to Station 7812+33NE wall from Station 7811+63 to Station 7812+33SW and SE walls from Station 7813+50 to Station 7814+17	MSE wall
I-10; Sky Harbor 22 nd Street Overpass [Now 24 th Street]	Walls located in front of both structures along 24 th Street (no as-built data)	Note: wall type is unknown (probable L-shape wall or soil nail wall)

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; Mohave Street Overpass [Now Sky Harbor Circle South]	Walls located on all 4 corners of eastbound and all 4 corners of westbound bridges at edge of roadway: <ul style="list-style-type: none"> EB bridge: Station 7859+24 to Station 7859+44 on outside and median edges EB bridge: Station 7860+62 to Station 7860+82 on outside and median edges WB bridge: Station 7859+26 to Station 7859+46 at median edge WB bridge: Station 7860+64 to Station 7860+84 at median edge WB bridge: Ramp W-N Station 236+29 to Station 236+44 on outside edge of I-10 WB bridge: Ramp W-N Station 234+78 to Station 234+93 on outside edge of I-10 Additional walls are located parallel to Sky Harbor Circle South adjacent to both abutments (no as-built or stationing data)	Cantilevered wall on spread footing tied to abutment stem walls Note: as-built data has not yet been obtained for the two walls located in front of both bridge structures; wall type is unknown (probable L-shape wall or soil nail wall)
I-10; South of Mohave Street Overpass	Located on the outside edge of I-10 from Ramp W-N Station 231+50 to Station 234+78.	Cantilevered wall on spread footing
I-10; SB17-EB10 Ramp Level 2 [EB17 over Ramp WN]	Walls located at all 4 corners of bridge: <ul style="list-style-type: none"> NW wall from I-17 Station 216+62 to Station 217+32 SW wall from I-17 Station 215+77 to Station 216+59 NE wall from I-17 Station 218+99 to Station 219+58 SE wall from Station 218+26 to Station 218+95 	Cantilevered wall on spread footing
I-10; EB10 & WB10 Over SB17-WB10 [Ramp WN]	Walls located at all 4 corners of I-10 over Ramp WN along roadway edges and between EB and WB overpasses at top of embankment (parallel to ramp): <ul style="list-style-type: none"> NW wall from Station 7871+55 to Station 7871+80 SW wall from Station 7873+46 to Station 7873+62 NE wall from Station 7869+01 to Station 7869+31 SE wall from Station 7871+27 to Station 7871+58 Wall between overpasses at northern abutment is centered about Station 7870+90 Wall between overpasses at southern abutment is centered about Station 7872+37 	Cantilevered wall on spread footing Note: walls at all 4 bridge corners abut wing walls tied to the abutments

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; 24 th Street Overpass	Walls located at all 4 bridge corners along roadway edges: <ul style="list-style-type: none"> NW wall from I-17 Station 239+98 to Station 240+37 NE wall from I-17 Station 241+82 to I-10 Station 7902+81 SW wall from I-17 Station 227+85 to Station 240+04 SE wall from I-17 Station 241+47 to I-10 Station 7902+22 	<u>NW wall:</u> cantilevered wall on spread footing <u>NE, SW, and SE walls:</u> MSE wall
I-10; University Drive Underpass (also known as 32 nd Street Underpass)	Walls located all 4 bridge corners at edges of 32 nd Street: <ul style="list-style-type: none"> Both sides of bridge from 32nd Street Station 18+43 to Station 18+64 Both sides of bridge from 32nd Street Station 21+32 to Station 21+53 The following walls are located parallel to 32 nd Street and described using aerial survey (no as-built data was available): <ul style="list-style-type: none"> On west side along roadway edge from 32nd Street Station 14+23 to Station 17+45 On east side at embankment toe from 32nd Street Station 10+30 to Station 12+68 	Cantilevered wall on dual row of straight steel piles Note: Wall type is unknown for the walls located between Stations 14+23 to 17+45 and 10+30 to 12+68 (visually observed as a masonry block wall – likely a property wall)
I-10; 40 th Street TI Underpass	Walls located along toe of Ramp D Station 19+51 to Station 22+77. Ramp C wall is also located along toe from Station 17+50 to Station 21+25; Another wall is located along the toe of Ramp B and follows 40 th Street to the south from Ramp B Station 11+33 to 40 th Street Station 25+10; Similarly, a wall is located along the toe of Ramp A and 40 th Street from Ramp A Station 17+00 to 40 th Street Station 13+66 The following wall is located at the embankment toe along 40 th Street (Station 15+03) returning around 40 th Street Ramp D (Station 24+22) As-built data could not be located for this wall so stationing was determined by aerial mapping	Cantilevered wall on spread footing Note: the wall type is unknown between 40 th Street Station 15+03 to 40 th Street Ramp D Station 24+22 (probable cantilevered wall on spread footing)
I-10; 48 th Street TI Underpass	Walls located in front of and adjacent to both abutments, approximately parallel to I-10 on both sides of the bridge;; West abutment walls located from Station 8091+69 to Station 8095+78; East abutment walls located from Station 8093+79 to Station 8096+52. Note: Stationing was approximated using aerial survey	Walls immediately in front of bridge are tie-back walls; Remaining portions of walls are on drilled shaft foundations
I-10; Broadway Road TI Underpass	Walls located in front of and adjacent to both abutments, approximately parallel to I-10 on both sides of the bridge West abutment walls from Station 8091+69 to Station 8095+78; East abutment walls from Station 8093+79; to Station 8096+52; Stationing was approximated using aerial mapping	Walls immediately in front of bridge are tie-back walls; Remaining portions of walls are on drilled shaft foundations

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; 52 nd Street/Broadway Road Intersection	Located on both sides and parallel to 52nd Street, north of Broadway Road Intersection; Eastern wall extends beyond ramp return and follows Broadway Road along the west side from 52nd Street Station 21+48 to Station 23+60, and the east side from Broadway Road Station 33+95 to 52nd Street Station 23+60	Cantilevered wall on spread footing; East wall has an interrupted spread footing; two drilled shafts were placed around an existing 102" storm drain
I-10; North Side of HOV-Southern Avenue Overpass	Two median barrier walls located at edge of I-10/US 60 HOV ramp; Both walls located from Station 7153+15 to Station 7156+38	Combination cantilevered retaining and barrier wall on spread footing
I-10; Southern Avenue Overpass	Located on north and south slopes of Southern Avenue Overpasses, parallel to Southern Avenue (all stations are Southern Avenue): <ul style="list-style-type: none"> Station 11+89 to Station 13+99 Station 14+87 to Station 15+17 Station 15+89 to Station 16+09 South slope only wall: <ul style="list-style-type: none"> Station 17+10 to Station 18+90 North slope only wall: <ul style="list-style-type: none"> Station 16+61 to Station 18+41 	Planter walls on spread footings
I-10; Ramp S-E, just south of Southern Avenue Overpass	Located at toe of embankment, parallel to Ramp S-E construction centerline Station 84+51 to Station 93+77; Note: no as-built record for this wall was available so the stationing based on aerial mapping	Cantilevered retaining wall on spread footing
I-10; Eastbound Transfer Ramp 4 (I-10/US60 TI)	Wall located along western edge of EB Transfer Ramp 4 between Ramp 4 Station 16+00 to Station 29+89	Combination cantilevered retaining wall and noise wall on spread footing (between Stations 16+00 and 19+00). MSE wall - Station 19+00 to Station 29+89)
WB60-EB10 Ramp (on east side of I-10/US60 TI)	Two walls located at the end of the bridge along the roadway edge where the bridge transitions into US60: <ul style="list-style-type: none"> NE wall from Ramp W-S Station 15+77 to Station 18+47 SE wall from Ramp W-S Station 17+27 to Station 18+47 	MSE wall
I-10; WB60-EB10 Ramp (west side of I-10/US60 TI)	One wall located between ramp and I-10 mainline where bridge transitions into I-10; the wall is located from Ramp W-S Station 39+53 to Station 41+03.	MSE wall
I-10; Eastbound Transfer Ramp 4 (southwestern quadrant of I-10/US60 TI)	Wall located along eastern edge of EB Transfer Ramp 4; Wall located from EB T-4 Station 23+49 to Station 25+80	MSE wall
I-10; I-10/US60 TI HOV Connector (I-10 side of I-10/US60 TI)	Walls located along each side of the HOV ramp; A MSE wall is also located in front of Abutment 1 of HOV connector bridge; The north end of walls transition to the HOV/Southern Overpass wing walls; the walls located on both sides of the ramp from Station 7158+08 to Station 7163+45. The walls are tied together in front of the bridge abutment at Station 7163+45	MSE wall

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; I-10/US60 HOV Connector (US60 side of the I-10/US60 TI)	Wall located in front of HOV Connector abutment and parallel to HOV ramp. North wall located from HOV Ramp Station 7175+45 to Station 7176+33; South wall located from Station 7175+45 to Station 7176+53; North and south walls are tied together in front of abutment at Station 7175+45; Wall stationing determined from aerial data; as-built plans do not show wall stationing relative to ramp	MSE wall
I-10; Ramp N-E over the Western Canal	Wall located at all four corners of bridge structure: <ul style="list-style-type: none"> SE wall from Ramp N-E Station 10+64 to Station 11+13 SW wall from Ramp N-E Station 10+96 to Station 11+82 NW wall from Station Ramp N-E 9+79 to Station 9+95 NE wall from Ramp N-E Station 9+29 to Station 9+50 	Cantilevered wall on drilled shafts
I-10; I-10 eastbound between the I-10/US60 TI and the Baseline Road TI Overpass	Wall located along outside edge of eastbound I-10 from Station 8185+12 to Station 8207+66 Wall located along western edge of eastbound I-10; from Ramp W-S Station 46+50 to Baseline Road Ramp C Station 15+84	Combination cantilevered retaining and barrier wall on spread footing MSE wall
I-10; I-10 Westbound C-D Road (north of Baseline Road TI Overpass)	Wall located between the westbound local lanes and express lanes from Station 8194+50 to Station 8207+63	Combination cantilevered retaining and barrier wall on spread footing
I-10; Baseline Road TI Ramp D	Wall located along the edge of Baseline Road Ramp D from Station 3+09 to Station 8+19	MSE wall
I-10; I-10 Westbound Local Lanes along Baseline Road Ramp D	Wall located along edge of westbound local lanes, providing grade separation from Baseline Ramp D north of the Baseline Road TI Overpass; Wall located between Station 8204+96 and Station 8210+36	MSE wall
I-10; North of Baseline Road TIOP	Wall located between Ramp W-S and eastbound I-10; Wall located between Ramp W-S Station 57+20 and I-10 Station 8209+51	MSE wall
I-10; I-10 Westbound C-D (Baseline Road Ramp A)	Wall located at the edge of the westbound local lanes to provide grade separation from Baseline Road Ramp A, south of the Baseline Road TI Overpass; The wall is located from Station 8212+01 to Station 8220+01	MSE wall
I-10; South of Baseline TIOP	Wall located along western edge of eastbound I-10 between Station 8211+16 and Station 8215+66	MSE wall
I-10; Baseline Road Ramp B	Wall located at the toe of the Baseline Road TI Ramp B embankment from Station 4+58 to Station 17+80; A noise wall is located on a portion of the retaining wall	Cantilevered retaining wall on spread footing from Station 4+58 to Station 12+07; Combination cantilevered retaining and noise wall on spread footing from Station 12+07 to Station 17+80

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; Baseline Road Ramp A	Wall located at the toe of the Ramp A embankment between Station 8215+63 and Station 8229+38	Cantilevered wall on spread footing (between Stations 8215+63 to 8221+30); Combination cantilevered retaining wall and noise wall on spread footing (between Stations 8221+30 to 8229+38)
I-10; Guadalupe Road	No as-built data could be found for the wall located between Guadalupe Road Station 10+91 to Station 13+20 (wall limits estimated using aerial mapping)	Note: wall type is unknown (probable cantilevered wall on spread footing)
I-10; Elliot Road TI Underpass	Two walls are located at the toe of the westbound Elliot Road embankment: <ul style="list-style-type: none"> NW wall located from Elliot Road Station 12+35 to Station 16+27 NE wall located from Elliot Road Station 23+82 to Station 31+00 	Cantilevered wall on spread footing
I-10; Warner Road TI Underpass	Wall is located at the toe of the Warner Road Ramp D embankment from Station 11+50 to Station 13+43	MSE wall
I-10; Ray Road TI Underpass (new walls are currently under construction at the time of this report)	All stations refer to the Ray Road construction centerline unless noted otherwise: Walls located parallel to Ray Road: <ul style="list-style-type: none"> South side: Station 11+19 to Station 15+56 North side: Station 23+66 to Station 27+40 Walls located at all 4 corners of the crossroad underpass: <ul style="list-style-type: none"> NW wall: Station 16+89 to Station 18+52 SW wall: Station 17+19 to Station 18+51 NE wall: Station 24+49 to Station 22+18 SE wall: Station 21+49 to Station 22+34 Wall located along Ray Road Ramp B from Station 3+00, that continues to Ray Road Station 27+98 Wall located along the toe of the Ray Road Ramp C embankment from Station 14+68 to Station 17+88 Additional wall located along Ray Road Ramp C from Station 18+37 to Station 20+29 (as-built data could not be located so the wall limits were estimated from aerial mapping)	Cantilevered wall on spread footing except for grouted segmental block gravity wall located along Ramp C from Station 14+68 to Station 17+88 Note: wall type is unknown for wall located along Ramp C from Station 18+37 to Station 20+29 (probable cantilevered wall on spread footing)

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-10; Chandler Boulevard TI Underpass	Walls located along Chandler Boulevard and interchange ramps: <ul style="list-style-type: none"> NW walls from Chandler Blvd Station 23+56 to 29+14, and Station 29+88 to Station 30+10 NE wall located from Chandler Blvd Station 10+14 to Chandler Blvd Ramp A Station 36+00 SW wall located from Chandler Blvd Ramp D Station 16+00 to Chandler Blvd Station 27+30 SE wall located from Chandler Ramp C Station 10+83 to Station 16+42, and Station 23+30 to Station 27+00 Also, walls also located at all 4 corners of the Chandler Blvd underpass structure: <ul style="list-style-type: none"> NW wall from Station 21+82 to Station 22+16 NE wall from Station 17+91 to Station 18+32 SW wall from Station 21+82 to Station 22+28. SE wall located from Station 17+88 to Station 18+32. 	Cantilevered wall on spread footing, except for SW wall along Chandler Blvd and Ramp D which is a combination cantilevered retaining wall and noise wall on a spread footing
I-17; 7 th Street Overpass	Walls located on both sides of freeway at the 7 th Street overpass: <ul style="list-style-type: none"> SW corner from Station 133+14 to Station 133+48 NW corner from Station 132+98 to Station 133+32 NE corner from Station 134+37 to Station 134+71 SE corner from Station 134+53 to Station 134+87 Planter walls located in front of 7 th Street Overpass and parallel to I-17 at the embankment toes (2-tier walls): <ul style="list-style-type: none"> North wall (west side) from Station 129+56 to Station 133+32 South wall (west side) from Station 130+09 to Station 133+48 North wall (east side) from Station 134+37 to Station 138+12 South wall (east side) from Station 134+53 to Station 138+10 	Cantilevered wall on spread footing tied to abutment stem Planter walls on spread footings

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
I-17; West of 7 th Street Overpass	Wall located between I-17 exit ramp and frontage road from Station 124+75 to Station 129+50	Cantilevered wall on spread footing
I-17; Central Avenue Overpass	<p>Located on both sides of I-17 at the Central Avenue overpass:</p> <ul style="list-style-type: none"> • SW corner from Station 106+68 to Station 107+02 • NW corner from Station 106+56 to Station 106+90 • NE corner from Station 108+09 to Station 108+42 • SE corner from Station 108+21 to Station 108+55 <p>Planter walls are located in front of the Central Avenue Overpass and parallel to I-17 at the toe of the embankment:</p> <ul style="list-style-type: none"> • North wall (west side) from Station 104+20 to Station 106+90 • South wall (west side) from Station 104+87 to Station 106+90 • North wall (east side) from Station 108+09 to Station 110+12 • South wall (east side) from Station 108+09 to Station 110+77 	<p>Cantilevered wall on spread footing tied to abutment stem</p> <p>Planter walls on spread footings</p>
I-17; East of 7 th Avenue Overpass	<p>Walls located between I-17 and the entrance and exit ramps adjacent to the frontage roads:</p> <ul style="list-style-type: none"> • North wall from Station 86+00 to Station 90+00 • South wall from Station 86+75 to Station 91+50 	Cantilevered wall on spread footing
I-17; 7 th Avenue Overpass	<p>Located along I-17 on both sides of the overpass:</p> <ul style="list-style-type: none"> • SW corner from Station 79+96 to Station 80+31 • NW corner from Station 79+83 to Station 80+18 • NE corner from Station 81+22 to Station 81+57 • SE corner from Station 81+35 to Station 81+70 <p>Planter walls are located in front of 7th Avenue Overpass and parallel to I-17 at embankment toes (2-tier walls):</p> <ul style="list-style-type: none"> • North wall (east side) from Station 81+22 to Station 84+57 • South wall (east side) from Station 81+35 to Station 84+90 <p>No as-built data found to date for planter walls on west side</p>	<p>Cantilevered wall on a dual row of battered steel piles and a single row of straight steel piles (tied to abutment stem).</p> <p>Planter walls on spread footings</p>

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
SR 143; University Drive TI Underpass	<p>Located on outside edges of SR143:</p> <ul style="list-style-type: none"> • West edge from Station 40+75 to Station 51+92 • West edge from Station 54+04 to Station 66+00 • East edge from Station 40+25 to Station 51+92 • East edge from Station 54+04 to Station 64+25 	<p>MSE walls</p> <p>Note: the 20' long walls located adjacent to the University Drive bridge structure are cast-in-place concrete walls founded on a dual row of battered steel piles at all 4 corners</p>
US 60; Ramp S-E to US 60 (I-10/US60 System TI)	Wall located along the edge of Ramp S-E and US60 eastbound from Station 144+33 to Station 148+78	Cantilevered wall on spread footing from Station 144+33 to Station 148+13; Tieback wall from Station 148+13 to Station 148+78
US 60; Priest Drive Westbound Overpass	<p>Walls located at edge of US 60 adjacent to bridge structure:</p> <ul style="list-style-type: none"> • NW wall from Station 119+37 to Station 120+17 • NE wall from Station 121+59 to Station 122+49 <p>Additional walls are on alignments skewed approximately 45 degrees to Priest Drive:</p> <ul style="list-style-type: none"> • SW wall from Station 117+82 to Station 120+71 • SE wall from Station 122+20 to Station 122+86 	<p><u>NW and NE walls:</u> Cantilevered wall on drilled shafts</p> <p><u>SW and SE walls:</u> MSE wall</p>
US 60; Hardy Drive Underpass	<p>Walls located at all four corners of Hardy Drive bridge structure:</p> <ul style="list-style-type: none"> • NW and NE walls from Hardy Drive Station 8+65 to Station 9+04 • SW and SE walls from Hardy Drive Station 10+96 to Station 11+35 	Cantilevered wall on spread footing
US 60; Westbound US 60 from Kyrene Road to west of Hardy Drive	Wall parallel to US 60 from Station 141+03 to Station 174+57	Cantilevered wall on spread footing except for 80' long tieback wall at Hardy Drive Underpass
US 60; West of Kyrene Road Underpass to Kyrene Pump Station (South side of US 60)	One wall located west of Kyrene Pump Station; Another wall is located from Station 71+60 to Station 72+33	Cantilevered wall on spread footing
US 60; Kyrene Road Underpass	<p>Walls located at edge of Kyrene Road at all four bridge corners:</p> <ul style="list-style-type: none"> • NE wall from Kyrene Road Station 8+60 to Station 8+97 • NW wall from Kyrene Road Station 8+67 to Station 8+98 • SE wall from Kyrene Road Station 11+03 to Station 11+40 • SW wall from Kyrene Road Station 11+04 to Station 11+41 	Cantilevered wall on spread footing

Table 4 – Existing Retaining Walls (continued)

Corridor and General Location	Retaining Wall Description (Approximate Freeway Construction Centerline Stationing)	Retaining Wall Type
US 60; Between the Hardy Drive Underpass and the Mill Avenue TI Ramps	Four walls (three on north side and one on south side) located at the edge of US60 and Mill Avenue Ramps A and B: <ul style="list-style-type: none"> North wall located from Station 48+81 to Station 72+97 (ties into Kyrene Underpass) North wall located from Station 74+01 to Station 75+29 (between Kyrene Road and UPRR underpasses) North wall located from Station 75+47 (UPRR underpass) to Station 83+54 South wall located from Station 48+74 to Station 83+50 	Soil nail walls
US 60; Mill Avenue TI Underpass	Two walls located at the edge of US 60: <ul style="list-style-type: none"> North wall from Station 86+35 to Station 92+75 South wall from Station 84+15 to Station 93+15 Walls are also located at all four corners of bridge structure, parallel to Mill Avenue: <ul style="list-style-type: none"> NW and NE walls from Mill Avenue Station 18+83 to Station 19+04 SW and SE walls from Mill Avenue Station 20+96 to Station 21+27 	<p>Along US 60: soil nail walls</p> <p>At Mill Avenue: cantilevered wall on spread footings</p>

1.3.9.3 Noise Walls

Existing noise wall locations are presented in Table 5. Masonry walls are predominant along US 60 while cast-in-place concrete walls are more prevalent along I-10. As-built stationing data is shown in the tables unless noted otherwise.

Table 5 – Existing Noise Walls

Corridor and General Location	Noise Wall Description (Approximate Freeway Construction Centerline Stationing)	Noise Wall Type
I-10; 24 th Street Ramp A	Wall located along Ramp A from Station 2+45 to Station 6+60	Cast-in-place concrete noise wall on spread footing
I-10; 48 th Street Ramp B (I-10 Eastbound)	Wall located along I-10/48 th Street exit Ramp from approximate Station 8047+68 to Station 8061+60	Masonry wall on spread footing
I-10; North of Southern Avenue along I-10 Westbound (fronting Edwards Drive)	Wall located along I-10 Westbound from Station 8144+39 to Station 8156+09. Wall at Station 8156+09 continues parallel to Southern Avenue construction centerline Station 11+71	Masonry wall on spread footing
I-10; Eastbound Transfer Ramp 4 at I-10/US60 TI	Wall located along the western edge of Ramp T-4 from Station 13+20 to Station 19+00	Cast-in-place concrete noise wall on spread footing from Station 13+20 to Station 16+00; Cast-in-place concrete combination cantilevered retaining and noise wall on spread footing from Station 16+00 to Station 19+00

Table 5 – Existing Noise Walls (continued)

Corridor and General Location	Noise Wall Description (Approximate Freeway Construction Centerline Stationing)	Noise Wall Type
I-10; Baseline Road Ramp A	Wall located at toe of Ramp A embankment from Station 8221+30 to Station 8229+38	Cast-in-place concrete combination cantilevered retaining and noise wall on spread footing
I-10; Baseline Road Ramp B	Wall located along edge of Ramp B from Ramp B Station 12+07 to I-10 Station 8228+71	Cast-in-place concrete combination cantilevered retaining and noise wall on spread footing from Ramp B Station 12+07 to Station 17+80; The remainder of the wall is a cast-in-place concrete noise wall on a spread footing
I-10; Baseline Road to Guadalupe Road	Walls located along both sides of I-10. In the eastbound direction of travel the walls are located at the following: <ul style="list-style-type: none"> Station 8228+71 to Station 8232+35 Station 8247+67 to Station 8262+34 In the westbound direction of travel the walls are located at the following: <ul style="list-style-type: none"> Station 8221+30 to Station 8251+00 	Cast-in-place concrete noise wall on spread footing
I-10; Elliot Road to Warner Road	Wall located along eastbound I-10 from Elliot Road Ramp D Station 3+75 to I-10 Station 8366+65. Note: the as-built drawings were unavailable for the end portion of this wall at Elliot Road so the end of wall stationing was determined by aerial mapping	Cast-in-place concrete noise wall on spread footing
I-10; Chandler Boulevard TI Underpass	Walls are located along Chandler Boulevard Ramp D and wrap around to Chandler Boulevard between Ramp D Station 13+30 and Chandler Boulevard Station 27+30	Cast-in-place concrete combination cantilevered retaining and noise wall on spread footing
US 60; Priest Drive to Hardy Drive	Walls area located along both sides of US60; The south wall extends from Ramp S-E Station 134+67 to US60 Station 47+99; The north wall extends from Ramp S-E Station 121+34 to US60 Station 48+02	Masonry wall on spread footing
US 60; Hardy Drive to Kyrene Underpass	Walls located along both sides of US60; The south wall extends from Station 48+80 to Station 55+00, and from Station 68+12 to Station 74+38.; The north wall extends from Station 48+73 to Station 74+37	Masonry wall on spread footing
US 60; Kyrene Underpass to Mill Avenue Ramps A and B	Walls located along both sides of US60 outside of Mill Avenue Ramps North wall located from Station 75+78 to Station 87+00; South wall located from Station 75+70 to Station 86+72	Masonry wall on spread footing
US 60; Mill Avenue Ramps C and D	Walls located along both sides of US 60 outside of the Mill Avenue ramps; The north wall extends from Station 90+96 to Station 102+29; The south wall extends from Station 88+33 to Station 102+18	Masonry wall on spread footing

1.3.10 Signing and Lighting

1.3.10.1 Guide Signs

The existing freeway guide signs are supported with cantilever sign supports, tubular sign bridges, and truss sign bridges. The existing guide signs vary in size, age and legend design since they were designed and installed with numerous projects. The majority of the existing sign bridges were not designed to accommodate future pavement widening based on a review of the as-built plans.

Table 6 summarizes the existing sign bridges that would be required to be modified to support the additional general-purpose and auxiliary lanes associated with this project.

Table 6 – Existing Sign Structures

Freeway Corridor	Direction of Travel	Station	Sign Structure Type	Span Length
I-10	Westbound	7819+84	Sign Bridge	105'-6"
I-10	Westbound	7828+00	Cantilever	32'
I-10	Westbound	7843+50	Cantilever	32'
I-10	Westbound	7851+00	Sign Bridge	129'-10"
I-10	Westbound	7866+00	Cantilever	32'
I-10	Westbound	7880+00	Cantilever	32'
I-10	Westbound	7893+50	Sign Bridge	117'-10"
I-10	Westbound	7911+20	Sign Bridge	113'-10"
I-10	Westbound	7921+00	Cantilever	32'
I-10	Westbound	7947+80	Sign Bridge	129'-10"
I-10	Westbound	7963+30	Sign Bridge	129'-10"
I-10	Westbound	7992+50	Cantilever	32'
I-10	Westbound	7999+00	Sign Bridge	121'-10"
I-10	Westbound	8036+75	Sign Bridge	137'-10"
I-10	Westbound	8055+00	Sign Bridge	121'-10"
I-10	Westbound	8084+00	Cantilever	32'
I-10	Westbound	8103+00	Sign Bridge	141'-10"
I-10	Westbound	8116+00	Sign Bridge	141'-10"
I-10	Westbound	8128+00	Sign Bridge	121'-10"
I-10	Westbound	8136+50	Sign Bridge	129'-10"
I-10	Westbound	8144+50	Sign Bridge	129'-10"
I-10	Westbound	8206+50	Sign Bridge	129'-10"
I-10	Westbound	8218+26	Sign Bridge	109'-10"
I-10	Westbound	8227+80	Sign Bridge	100'
I-10	Eastbound	7825+57	Sign Bridge	105'-6"
I-10	Eastbound	7837+30	Sign Bridge	93'-6"
I-10	Eastbound	7846+00	Cantilever	32'

Table 6 – Existing Sign Structures (continued)

Freeway Corridor	Direction of Travel	Station	Sign Structure Type	Span Length
I-10	Eastbound	7864+00	Sign Bridge	129'-10"
I-10	Eastbound	7924+00	Cantilever	32'
I-10	Eastbound	7951+00	Cantilever	32'
I-10	Eastbound	7961+80	Sign Bridge	129'
I-10	Eastbound	7994+00	Cantilever	28'
I-10	Eastbound	8004+00	Sign Bridge	125'-10"
I-10	Eastbound	8042+50	Sign Bridge	137'-10"
I-10	Eastbound	8058+75	Sign Bridge	141'-10"
I-10	Eastbound	8100+00	Sign Bridge	125'-10"
I-10	Eastbound	8114++50	Sign Bridge	129'-10"
I-10	Eastbound	8136+00	Sign Bridge	105'-6"
I-10	Eastbound	8146+09	Sign Bridge	118'
I-10	Eastbound	8160+06	Cantilever	32'
I-10	Eastbound	8188+00	Cantilever	16'
I-10	Eastbound	8197+50	Sign Bridge	62'
I-17	Northbound	113+50	Cantilever	32'
I-17	Northbound	132+00	Cantilever	32'
I-17	Northbound	147+00	Cantilever	32'
I-17	Northbound	162+85	Cantilever	32'
I-17	Northbound	192+50	Cantilever	32'
I-17	Southbound	122+00	Cantilever	32'
I-17	Southbound	135+00	Cantilever	32'
I-17	Southbound	156+10	Cantilever	32'
I-17	Southbound	172+00	Sign Bridge	69'
I-17	Southbound	191+50	Cantilever	32'
I-17	Southbound	202+50	Sign Bridge	69'
I-17	Southbound	216+50	Cantilever	32'
SR 143	Northbound	26+50	Cantilever	32'
SR 143	Southbound	43+60	Sign Bridge	100'
SR 143	Southbound	35+20	Sign Bridge	120'
SR 143	Southbound	24+30	Sign Bridge	65'
US 60	Eastbound	131+40	Sign Bridge	86'
US 60	Westbound	125+00	Sign Bridge	86'
US 60	Westbound	133+60	Sign Bridge	86'
US 60	Westbound	142+73	Cantilever	32'
US 60	Westbound	173+18	Sign Bridge	90'

1.3.10.2 Freeway Lighting

The existing I-10 freeway lighting consists of high mast lighting at the system interchanges, and a mixture of median mounted high mast poles and offset mounted poles. The pole heights vary in the vicinity of the service interchange ramps.

The I-10 mainline and ramp lighting systems are energized with 240/480 volt Type IV load centers. Table 7 presents the locations of the existing load centers and the limits of the lighting fixtures associated with each load center.

Table 7 – Existing Load Center Locations

Freeway Corridor	Direction	Location (Station)	Load Center Type	Begin Lighting System Limit	End Lighting System Limit
I-10	Westbound	7874+00	IV	I-17 Station 208+00	I-10 Station 7891+00
I-10	Westbound	7918+00	IV	Station 7893+50	Station 7931+75
I-10	Westbound	8067+00	IV	Station 8068+00	Station 8103+50
I-10	Westbound	8117+00	IV	Station 8107+00	Station 8140+00
I-10	Westbound	8208+00	IV	Station 8193+00	Station 8230+00
I-10	Eastbound	7939+00	IV	Station 7812+00	Station 7839+50
I-10	Eastbound	7974+00	IV	Station 7974+00	Station 8000+00
I-10	Eastbound	8037+00	IV	Station 8032+00	Station 8064+00
I-10	Eastbound	8159+00	IV	Station 8145+00	Station 8188+00
US 60	Westbound	113+75	IV	Station 103+00	Station 135+00
US 60	Eastbound	48+00	IV	Station 138+00 ⁽¹⁾	Station 86+00 ⁽¹⁾
US 60	Eastbound	120+45	IV	Station 89+00	Station 126+00

(1) Station Equation: Station 147+00 Bk = Station 49+00 Ahd

1.3.11 Freeway Management System (FMS)

The existing Freeway Management System (FMS) consists of node buildings, communications trunk lines, ramp meters at various entrance ramps, Dynamic Message Signs (DMS), CCTV cameras, detector loops and other features.

1.3.11.1 FMS Communications and Trunk Line

Node buildings serve as the communications hubs with the Traffic Operations Center (TOC) for the existing fiber optic and copper wire communication system. The existing Node buildings that are located within the study limits are shown in Table 8.

Table 8 – Existing FMS Node Buildings

Node Building No.	Location
Node No. 7	North of Buckeye Road and east of the I-10 westbound roadway
Node No. 8	South of eastbound I-10 Mainline at the I-10/I-17 TI
Node No. 12	West of the Broadway Road TI eastbound entrance ramp
Node Nos. 9/10	SR143/SR202L TI; but is serviced through Node No. 7

The trunk line of the FMS system is the primary conduit that carries the information collected by devices between nodes to the TOC. Within the I-10 corridor, the trunk line also carries the power for the operation of the FMS system. The FMS system uses a 120/240 volt power system. Salt River Project or Arizona Public Service provides the power source depending on the load center location.

The FMS communication system includes three 3” conduits with fiber optic cables typically located along the shoulders of the existing roadways. The conduit system is concrete encased, and is typically attached to the bridge structures at the overpasses. Most of the freeway corridors are designed with a trunk line located on each side of the roadway that occasionally connect to each other for redundancy within the system.

The node buildings are connected to each other with this redundant fiber optic cable, termed a ring. In order to maintain communications during relocation, the cable on one side of the mainline (one side of the ring) must remain connected at all times.

1.3.11.2 FMS Devices

Dynamic Message Signs (DMS)

DMS are used to communicate important messages from the TOC to motorists on the freeway. All of the signs are manufactured by Fiber Optic Display Systems (FDS) and are a fiber optic hybrid type. The sign hardware may vary for signs installed in different projects at different periods of time. However, each sign is compatible with the ADOT FMS system. ADOT is converting each sign to the Mecure DMS control software in order to enhance functionality.

All of the DMS are connected to the ADOT FMS communication system through the trunk lines and node buildings. No signs are connected to the TOC through a cellular or land-line telephone connection. Twelve (12) DMS signs are located within the project limits as shown in Table 9.

Table 9 – Existing DMS Locations

Freeway Corridor	Direction/ Milepost	Cabinet ID	DMS No.	Structure Type	Location Description
I-10	Westbound, MP 148.26	1014826	12	Box truss	Near Jefferson Street overpass
I-10	Westbound, MP 150.98	1015098	11	Box truss	32 nd Street westbound entrance ramp
I-10	Westbound, MP 153.56	1115356	7	Box truss	Broadway Road eastbound entrance ramp
I-10	Westbound, MP 154.26	1015426	10	Box truss	Just north of Southern Avenue
I-10	Westbound, MP 156.82	1015682	8	Box truss	Near Guadalupe Road overpass
I-10	Westbound, MP 159.71	1015971	9	Crossroad overpass	Mounted on Ray Road overpass
I-10	Eastbound, MP 148.38	1114838	5	Box truss	Near Jefferson Street eastbound entrance ramp
I-10	Eastbound, MP 151.76	1115176	6	Box truss	Between 32 nd and 40 th Streets
I-10	Eastbound, MP 157.14	1115714	7A1	Monotube bridge	Between Guadalupe and Elliot Roads
I-10	Eastbound, MP 158.68	1115868	7A2	Crossroad overpass	Mounted on Warner Road overpass
SR143	Northbound, MP 0.57	410057	54	Monotube bridge	Approaching University Drive overpass
US60	Eastbound, MP 172.59	3117259	16	Box truss	Near Priest Drive eastbound entrance ramp

Closed Circuit Television (CCTV)

CCTV cameras are used to remotely view traffic conditions and incidents from the TOC. The CCTV cameras are typically installed on 55’ high modified “T” poles that are located within the freeway right-of-way. The hardware is typically mounted inside of the Type 343 cabinet that is mounted near the bottom of the pole.

The cameras are typically the barrel type manufactured by either COHU or Javelin. The later FMS projects used the COHU cameras, while the early projects used the Javelin cameras.

Sixteen cameras are currently operating within the study area, as provided in Table 10.

Table 10 – Existing CCTV Locations

Freeway Corridor	Direction/ Milepost	Cabinet ID	Cabinet Type	CCTV No.	Location Description
I-10	Westbound, MP 147.91	1014791	343	14	North of Van Buren Street underpass
I-10	Westbound, MP 148.65	1014865	343	15	South of Grant Road underpass
I-10	Westbound, MP 151.48	1015148	343	18	East of 32 nd Street
I-10	Westbound, MP 152.61	1015261	341A	19	Between 40 th Street and SR143
I-10	Westbound, MP 153.11	1015311	343	20	East of I-10/SR143 TI
I-10	Westbound, MP 154.25	1015425	341A	7A7	Between Broadway Road and Southern Avenue
I-10	Westbound, MP 156.05	1015605	343	7A6	Between Baseline and Guadalupe Roads
I-10	Eastbound, MP 155.21	1115521	343	7A1	South of I-10/US60 TI
I-10	Eastbound, MP 150.39	1115039	341A	17	West of Salt River Bridge
I-10	Eastbound, MP 157.12	1115712	341A	7A3	Between Guadalupe and Elliot Roads
I-10	Eastbound, MP 158.22	1115822	341A	7A4	Between Elliot and Warner Roads
I-10	Eastbound, MP 159.24	1115924	341A	7A5	Between Warner and Ray Roads
I-10	Eastbound, MP 160.25	1116025	341A	7A6	South of Ray Road
I-17	Eastbound, MP 195.45	2019545	341A	30	At 12 th Street underpass
SR143	Northbound, MP 0.51	4100051	341A	77	South of University Drive underpass
SR143	Northbound, MP 1.41	4100141	341A	76	South of Salt River bridge
US60	Westbound, MP 172.38	3017238	343	NA	West of Priest Drive underpass

Detector Stations and Ramp Meters

As part of the FMS system, ADOT has included a series of count or detector stations to monitor freeway traffic and congestion. The detector stations have been installed at a spacing of 1/3 mile along each freeway roadway. The mainline detector stations generally consist of a pair of loop detectors placed within each lane. An alternative to detector loops is the Passive Acoustic Detectors (PADs) that are typically installed on poles approximately 37’ above the roadway, and are mounted near the roadway (median or shoulder).

Loops have also been installed beneath the exit and entrance ramps to provide traffic count data and to serve as detection for ramp metering sites. Ramp metering is designed to limit the traffic demand on the mainline by metering the volume of entrance ramp traffic based on freeway volumes. There are four configurations that a ramp can be categorized with respect to ramp metering including: 1.) not metered; 2.) single lane – metered; 3.) dual lane – metered; and, 4.) single lane – metered single lane with not-metered HOV bypass lane.

The ramp meter status for the traffic interchanges located within the study limits is included in Table 11.

Table 11 – Ramp Meter Locations and Configuration

Freeway Corridor	Entrance Ramp Location	Ramp Meter Configuration
I-10	Washington Street – eastbound	Dual lane – metered
I-10	Jefferson Street – eastbound	Dual lane – metered
I-10	Sky Harbor Boulevard – westbound	Dual lane – metered
I-10	24 th Street – eastbound	Single lane – metered
I-10	32 nd Street – westbound	Single lane – metered
I-10	32 nd Street – eastbound	Single lane – metered
I-10	40 th Street – westbound	Single lane – metered
I-10	40 th Street – eastbound	Single lane – metered
I-10	Broadway Road – westbound	Not metered
I-10	Broadway Road – eastbound	Dual lane – metered
I-10	Baseline Road – westbound	Not metered
I-10	Baseline Road – eastbound	Dual lane – metered
I-10	Elliot Road – westbound	Dual lane – metered
I-10	Elliot Road – eastbound	Dual lane – metered
I-10	Warner Road – westbound	Dual lane – metered
I-10	Warner Road – eastbound	Single lane – metered
I-10	Ray Road – westbound	Dual lane – metered
I-10	Ray Road – eastbound	Not metered
I-10	Chandler Boulevard – westbound	Not metered
I-17	7 th Street – southbound	Single lane – metered
I-17	16 th Street – northbound	Single lane - metered
SR143	University Drive – northbound	Not metered
SR143	University Drive – southbound	Not metered
US60	Priest Drive – eastbound	Dual lane – metered
US60	Mill Avenue – westbound	Dual lane - metered

Ramp metering and detection stations are installed in either a Type 341 A controller cabinet of a Type 341D controller cabinet. The two cabinet types are physically similar with the distinction being that the Type 341D cabinet houses two NEMA Type 179 controllers and the 341A controller cabinet houses only one. The 341D typically is used to monitor both sides of the freeway from a single cabinet.

The ramp metering sites will typically have an adjacent traffic counting station whose detectors (loops or PADs) will also be included in the Type 341 controller cabinet along with the ramp metering functions and hardware. Approximately 100 detector stations are located within the study limits.

1.3.12 Geotechnical Conditions

Existing Subsurface Conditions

The generalized subsurface conditions were determined based on review of published geologic maps and relevant experience with previous geotechnical investigations performed within the study area. It is understood that the general project limits currently extend SR 51 to Chandler Boulevard on I-10; from the I-10/I-17 TI to 7th Avenue on I-17; from the I-10/SR143 TI to the south side of the Salt River on SR 143; and from the I-10/US60 TI to Mill Avenue on US 60

The majority of near surface materials present within the study area consists of Quaternary (recent) alluvial soils that vary from non-plastic to low plasticity sandy soils to low to medium plasticity silty to clayey soils. The sandy less plastic soils tend to be present within the near vicinity (approximately within one-half to one mile) of the active Salt River stream bed, with older Quaternary age, low to medium plasticity, weakly to moderately calcium carbonate (lime) cemented soils being present elsewhere. Within the active Salt River channel, the majority of finer grained soils have been washed downstream exposing a denser layer of gravelly sands and sand, gravel and cobbles (locally known as SGC). The SGC is typically several feet to as much as 200' in thickness. The SGC, which is associated with historical flows and meandering of the Salt River, underlies a large portion of the Phoenix metropolitan area, extending the length of the Salt River (east to west) and north beyond the current project limits along I-10 and SR 143. SGC is also known to underlie the portion of US 60 within the study area. The thickness of the finer grained alluvial soils which overlie SGC typically varies from about 10' to 30', typically increasing with distance from the active river channel. The southern limit of the SGC deposit is unknown, but likely terminates near Elliot Road along I-10. Soils present at depth to the south of the SGC limits on I-10 consist typically of finer grained, low to medium plasticity, weakly to moderately lime cemented silty to sandy clays and clayey sand.

Relatively shallow to exposed bedrock and associated cemented colluvial soil is present along I-10 between Broadway Road and Southern Avenue. This is the only area where shallow bedrock should impact construction within the study area limits.

From a foundation design standpoint, the finer grained alluvial soils that overlie SGC throughout the project area is considered to be marginal when supporting structures at moderate to high allowable soil bearing pressures. In order to limit settlement, most of the heavier structures, including bridges and high retaining walls will likely need to be supported by footings that extend to SGC or by drilled shaft foundations that derive their capacity primarily within the SGC. The SGC is well suited for support of heavy structures with little to no post construction settlement. Lighter structures, limited height roadway embankments and pavements can be safely supported on the alluvial soils, with little to no ground modification. The bedrock, where present, will also be well suited for support of all loading ranges. Some ground modification may be required in areas where uncontrolled fills are encountered.

SGC is known to extend to depths of 100' or more. Most of the SGC is non-plastic and uncemented, though it does contain isolated lenses or layers (generally at depth) with higher

percentages of low to medium plastic fines. The upper contact (5' to 10') of this stratum is also locally weakly to moderately cemented with calcium carbonate.

Groundwater is present at relatively shallow depths within the near vicinity of the Salt River. It is anticipated that any structures that require drilled shaft foundations to penetrate the SGC, and which are located within one mile of the river, will likely encounter water during construction. Groundwater mapping that was completed in 1992 (Hammett and Herther) indicate water levels in wells drilled in the near this area to range from about 25' to 130' deep. Typically, excavations required for shallow foundations will not encounter groundwater.

Though some of the project area is likely dropping due to general groundwater withdrawals, there are no known earth fissures within or near the project study area. The potential for development of fissures also appears to be low given the recharge that is normally associated with the Salt River.

Pavement Structural Sections

The existing pavement structural sections were obtained from the as-built plans and available geotechnical investigation reports. The existing pavement structural sections that were constructed with the previous freeway projects are provided in Table 12.

Table 12 – Existing Pavement Structural Sections

Freeway Corridor	Location	AR-ACFC (in)	PCCP (in)	CTB (in)	LCB (in)	ACB (in)	AB-2 (in)	Select (in)
I-10	3 rd Street to I-10/I-17 TI	1	10		5			
I-10	I-10/I-17 TI to 28 th Street	1	10		5			
I-10	28 th Street to 40 th Street	1	10		5			
I-10	40 th Street to Southern Avenue	1	14.5			3		
I-10	Southern Avenue to Baseline Road	1	12			4		
I-10	Baseline Road to Chandler Boulevard	1	13			4		
I-17	7 th Avenue to 16 th Street	1	9				3	6
I-17	16 th Street to I-10/I-17 TI	1	9				4	5
SR 143	Broadway Road to University Drive	1	12.5				4	
US 60	I-10 to Mill Avenue (original pavement)	1	9	4			4	
US 60	I-10 to Mill Avenue (mainline widening)		12			4		

1.3.13 Previous Projects

The ADOT Milepost Strip Map shows the project listed in Table 13 below:

Table 13 – Previous Projects

Freeway Corridor	Project Number and/or TRACS Number	Milepost	As-Built Date	Description
I-10	H2798 02C	134.5 - 143 143 - 150	1994	83rd Ave. - 25th Ave. (FMS) 25th Ave. - 24th St. (FMS)
I-10	I-10-3(187) H0116 01C	144.6	1984	Inner Loop Drain Tunnels
I-10	I-10-3(188) H0117 01C	144.6	1984	Inner Loop Drain Tunnels
I-10	I-10-3(189) H0118 01C	144.6	1984	Inner Loop Drain Tunnels
I-10	AZI-10-3(239) H0089 04C	145.4 - 149.4	1986	7th Street-Mohave Vol. I - Paving 7th Street-Mohave Vol. II - Drainage & Structures 7th Street-Mohave Vol. III - Traffic/Pump Stations/Utility Relocations
I-10	I-10-3(203) H0087 04C	146.6 - 147.6	1988	Connecting Lane Structures E-W
I-10	I-10-3(215) H2315 01C	146.7	1990	16th St. Underpass
I-10	051-A(003)B H6100 01C	N/A	2004	I-10 - Shea Blvd. - HOV Lanes Vol. 1-4 (SR 51 HOV Connector)
I-10	AZI-10-3(224) H2545 01C	147.0	1985	East Tunnel Outlet (Buckeye Rd. Dropshaft)
I-10	I-10-3(218) NO TRACS	147.8	1985	Washington St. & Jefferson St. OP
I-10	I-10-3(238) H1205 01C	148.1	1990	Washington St. - Jefferson St. T.I. GD
I-10	ACI-10-3(220) H012701C	148.4	1990	Southern Pacific R.R. Overpass
I-10	I-10-3(512) H3043 01C	149.0	1991	Structure #1997 NB I-17 over I-10 Ramp N/W
I-10	IIR-10-3(323) H0108 05C	149.0	1990	Buckeye Rd. - 32nd St. - Landscape/ Erosion Control
I-10	ACI-10-3(217) H2341 01C	149.2	1990	Sky Harbor Blvd - 24th St. - Pvmt/GD (see .319)
I-10	I-10-3-937 NO TRACS	149.6 - 153.5	1980	24th St. - Broadway Rd. - Slurry Seal
I-10	I-10-3(204) H0155 04C	149.8 - 150.3	1985	16th St. - 28th St. - GD/Strs (cross ref I-10-3(221))
I-10	I-10-3(221) H0107 01C	149.8 - 150.3	1985	16th St. - 28th St. - GD/Strs (cross ref I-10-3(204))
I-10	I-10-3(50) NO TRACS	149.9 - 152.1	1964	24th St. - 40th St. - GD
I-10	ACI-10-3(225) H0128 01C	150.0 - 150.4	1990	Inner Loop E. Tunnel Outfall
I-10	I-10-3(270) H0128 05C	150.0 - 150.4	1989	Inner Loop E. Tunnel Outfall
I-10	ACIR-10-3(243) H0108 04C	150.0	1988	Buckeye Rd. - 32nd St. - Erosion Control
I-10	I-10-3-507 H2839 01C	150.0	1990	Bridge Repair - Structure #2003
I-10	H0192 07C	150 - 154	1994	24th St. - Southern Ave. (FMS)

Table 13 – Previous Projects (continued)

Freeway Corridor	Project Number and/or TRACS Number	Milepost	As-Built Date	Description
I-10	IR-10-3(206) H0094 01C	150.3	1991	Salt River Bridges & 32nd St. Underpass - GD
I-10	I-10-5-519 H3333 01C	150.7	1993	Repair Salt River Bridge #2003 (Pier #4)
I-10	ACIR-10-3-196 H2032 01C	151.1 - 151.6	1988	32nd St. T.I. - Complete Diamond T.I.
I-10	IR-10-3(312) H0143 04C	151.6 - 154.3	1989	Ramps and Signs, New BR, Reconstruct T.I., 40th St. T.I.
I-10	I-10-3(33) NO TRACS	152.0 - 153.9	1966	40th St. - Broadway Rd.
I-10	I-10-3(54)NO TRACS	152.0 - 155.5	1967	40th St. - Baseline Rd. - BC PCC
I-10	IR-10-3(326) H2798 01C	152.0	1989	VMS - Various Locations
I-10	STP-10-3(337) H3144 01C	152.0 - 152.2	1992	40th St. Landscaping, Erosion Control, Bank Protection
I-10	I-10-3(107) NO TRACS	152.1 - 155.7	1976	40th St. - Baseline - Landscaping
I-10	STP-10-3(331) H2875 01C	152.1 - 154.2	1992	44th St. - Southern Ave. - Landscaping/ Irrigation
I-10	ACIR-10-3(315) I-10-3(309) H203601C	152.2 - 154.5	1990	40th St. - Southern Ave. 44th St. - Superstition - GC, PV
I-10	ACIR-10-3(198) H2650 01C	152.9 - 153.9	1988	48th St. & Broadway Rd. T.I. - EB Widening
I-10	I-10-3(521) H3862 01C	153.1 - 154.2	1995	I-10 Frontage - Broadway Rd. - Pavement Preservation
I-10	I-10-3(51) NO TRACS	153.9 - 155.1	1966	Broadway Rd. - Baseline - GD
I-10	ACIR-10-3(260) H2080 01C	154.0 - 155.1	1989	Southern Ave. Structure O P, Widening
I-10	NH-10-3(310) H0142 04C	154.0 - 157.9	1992	Superstition T.I. - Baseline Unit I: Vol. I - IV
I-10	NH-10-3(317) H2035 01C	154.3 - 156.0	1994	Superstition T.I. - Baseline Unit II: Vol. I - IV
I-10	NH-10-3(339) H3227 01C	154.6 - 155.9	1992	Superstition T.I. - Baseline Unit I: Sewer Pipe
I-10	I-10-3(60) NO TRACS	155.1 - 155.2	1964	Western Canal Bridge
I-10	I-10-3(34) NO TRACS	155.2 - 158.8	1964	Baseline Rd. - Warner Rd. - GD
I-10	I-10-3(56) NO TRACS	155.2 - 160.1	1966	Baseline Rd. - Williams Field Rd. - BC, AC
I-10	I-10-C-503 H5540 01C	155.6	2000	Phx-Casa Grande Hwy I-10 - Baseline Rd. T.I. - OP #1097 - B Deck Joint Repair
I-10	I-10-3(133) NO TRACS	155.6 - 157.9	1984	Baseline Rd. - Elliot Rd. - Landscape & Irrigation
I-10	I-10-3(533) H5050 01C	155.6 - 157.7	1999	Phx-Casa Grande Hwy I-10 -Baseline Rd. - Elliot Rd. - Landscape & Irrigation
I-10	AC-10-3(322) H2382 01C	156.0 - 160.2	1995	Baseline Rd. -Chandler Blvd. - Close/Add Median Lane
I-10	IM-10-3(353)P H3880 01C	156.4 - 156.8	2000	Phx - Tucson Hwy I-10 - Guadalupe Rd. Underpass #1098 - Remove/Replace Bridges
I-10	M-514-8(1) H2383 03C	157.5 - 157.9	1991	Elliot Rd. T.I. Reconstruction

Table 13 – Previous Projects (continued)

Freeway Corridor	Project Number and/or TRACS Number	Milepost	As-Built Date	Description
I-10	I-10-C-202 H5756 01C	158.0 - 159.6	2002	Elliot Rd. - Ray Rd. - Auxiliary Lane
I-10	I-10-3(241) NO TRACS	158.1 - 160.9	1987	Warner Rd. T.I. Landscaping and Signing
I-10	I-10-3(53) NO TRACS	158.7 - 161.7	1965	Warner Rd. - Reservation Ln. - GD
I-10	I-10-C-501 H5482 01C	158.8 - 159.3	Not Available	Phx - Casa Grande Hwy I-10 & Warner Rd. - Constr Wall
I-10	I-10-3(236) H0121 05C	159.0	1985	Western Canal - Ray Rd. T.I. (SRP Project)
I-10	IR-10-3(194) NO TRACS	160.0 - 160.7	1985	Ray Rd. T.I.
I-10	AC-STP-600-6(1)B H508701C	160	2000	I-10/SR 202L T.I. Phase I
I-10	AC-STP-600-7(1)B H508801C	160	2001	I-10/SR 202L T.I. Phase II
I-17	I-10-3(64)	195.0 - 195.6	1965	16th St. & Jct. I-510 Storm Drain
I-17	I-10-3(21)	195.0 - 196.0	1963	16th St. - 24th St. - GD Str
I-17	I-10-3(11)	196.5 - 196.6	1962	7th Ave. - 16th Ave. - Structure- Also 18.23.17
I-17	I-10-3(12)	196.5 - 198.5	1962	7th Ave. - 16th Ave. - GD
I-17	I-10-3(13)	196.5 - 198.5	1963	7th Ave. - 16 St. - BC, PCC
I-17	I-10-3(9)	197.0 - 198.8	1962	Durango T.I. - 7th Ave. - GD
I-17	I-10-3(10)	197.0 - 198.8	1963	Durango T.I. - 7th Ave. - BC, PPC
I-17	I-10-3(45)	198.2 - 202.0	1963	Durango T.I. - 16th St. - Signs/Delinators
I-17	I-10-3(62)	198.5 - 201.5	1966	19th Ave. - 16th St. - Median Barriers
I-17	I-10-3(52)	195.0 - 198.5	1965	16th St. - 24th St. - BC PCC 18.23.22
I-17	H0192 07C	201.9	1994	Thomas Rd. to Maricopa Rd. T.I. (FMS)
SR 143	RAM-600-3-506	0.0	1984	University Dr. T.I.
SR 143	RAM-600-3-503	0.0 - 0.5	1977	I-10 - University Dr.
SR 143	RAM-600-3(5)P	0.0 - 0.5	1998	I-10 - University Dr.
SR 143	RAM-600-3-511 H204501C	0.0 - 0.6	1995	University Dr. - Sky Harbor Blvd.
SR 143	RAM-600-3-501	0.0 - 1.2	1980	Hohokam Tempe Drain - Sky Harbor Blvd
SR 143	RAM-600-3-514 H2045 02C	3.0 - 4.1	1990	Sky Harbor Blvd. - Washington St.
SR 143	ST-833103		Not Available	48th St. Storm Drain - Baseline Rd. to Broadway Rd. (City of Tempe Project)
SR 143	900-0(96) H3826 01C		1996	SR51 from I-10 to Glendale Ave. (FMS) SR143 from I-10 to 202L (FMS) 202L from I-10 to SR143 (FMS)
US 60	F-028-1(1) NO TRACS	0.4 - 2.2	1969	Jct. I-10 - Rural Rd.
US 60	AC-NH-060-C(001)B H5370 01C	173.0 - 184.0	2003	I-10 - Val Vista Dr. Segments 1 & 2 (HOV Lanes)

[Text resumes on page 53]

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

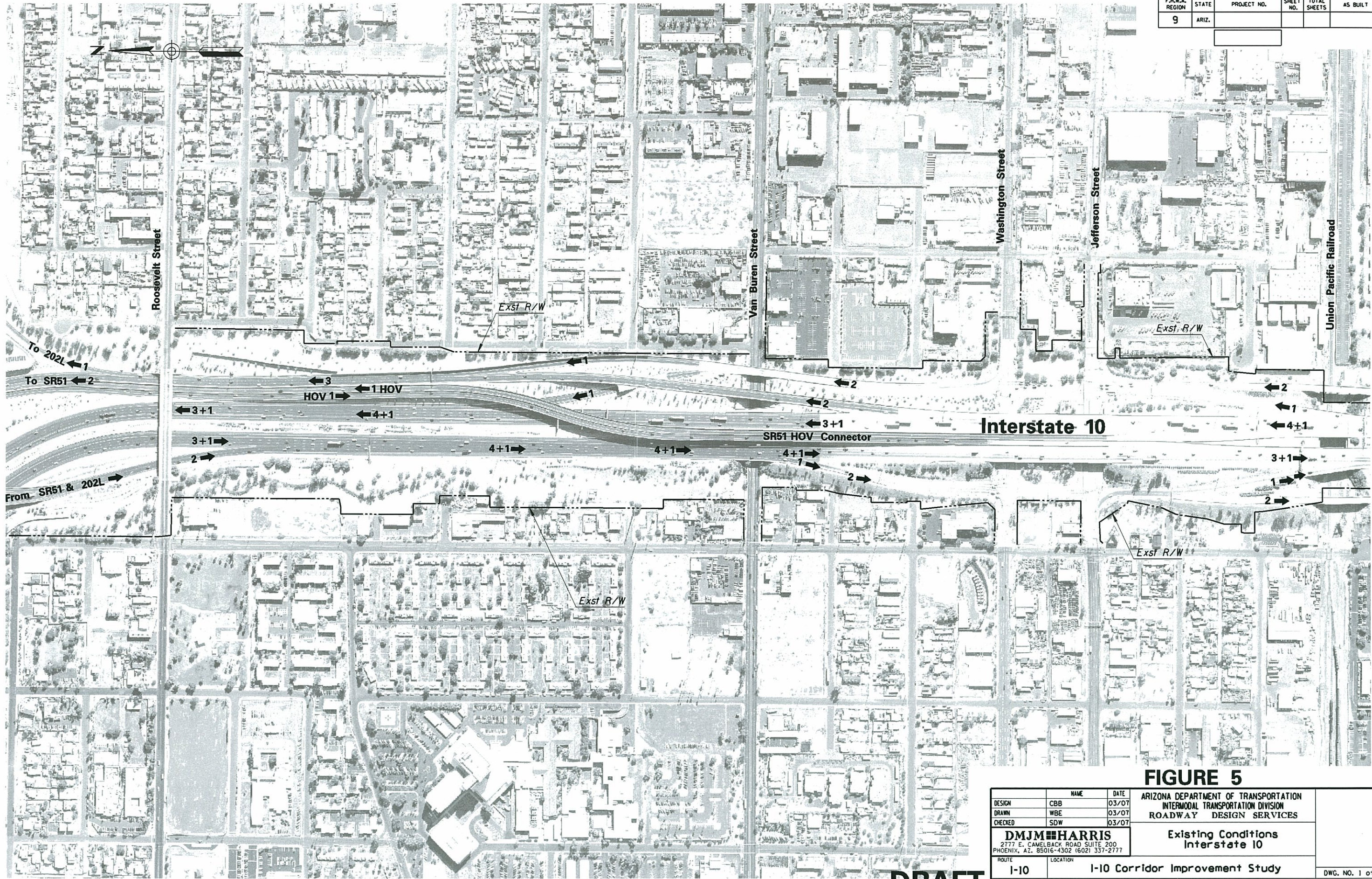


FIGURE 5

NAME		DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	Existing Conditions Interstate 10	DWG. NO. 1 of 20
DESIGN	CBB	03/07			
DRAWN	WBE	03/07			
CHECKED	SDW	03/07			
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777					
ROUTE	LOCATION				
I-10	I-10 Corridor Improvement Study				
TRACS NO. H545401L			PAGE 33 OF		

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	Existing Conditions Interstate 10
DESIGN	CBB		03/07		
DRAWN	WBE		03/07		
CHECKED	SDW		03/07		
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777					
ROUTE		LOCATION			DWG. NO. 2 of 20
I-10		I-10 Corridor Improvement Study			
TRACS NO. H545401L				PAGE 34 OF	

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES		Existing Conditions Interstate 17	DWG. NO. 3 of 20
DESIGN		CBB	03/07				
DRAWN		WBE	03/07				
CHECKED		SDW	03/07				
DMJM HARRIS							
2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777							
ROUTE		LOCATION					
I-10		I-10 Corridor Improvement Study					
TRACS NO. H545401L						PAGE 35 OF	

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DESIGN		CBB	03/07	
DRAWN		WBE	03/07	
CHECKED		SDW	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 17
ROUTE		LOCATION		
I-10		I-10 Corridor Improvement Study		
				DWG. NO. 4 of 20
TRACS NO. H545401L				PAGE 36 OF

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	Existing Conditions Interstate 17
DESIGN	CBB		03/07		
DRAWN	WBE		03/07		
CHECKED	SDW		03/07		
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777					
ROUTE		LOCATION			DWG. NO. 5 of 20
I-10		I-10 Corridor Improvement Study			
TRACS NO. H545401L				PAGE 37 OF	

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

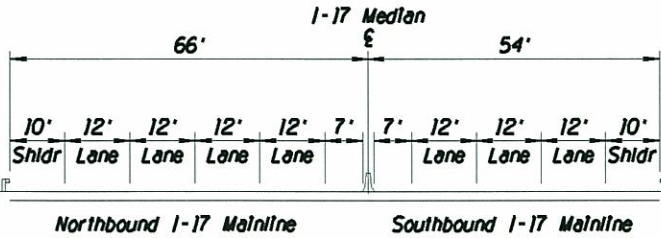
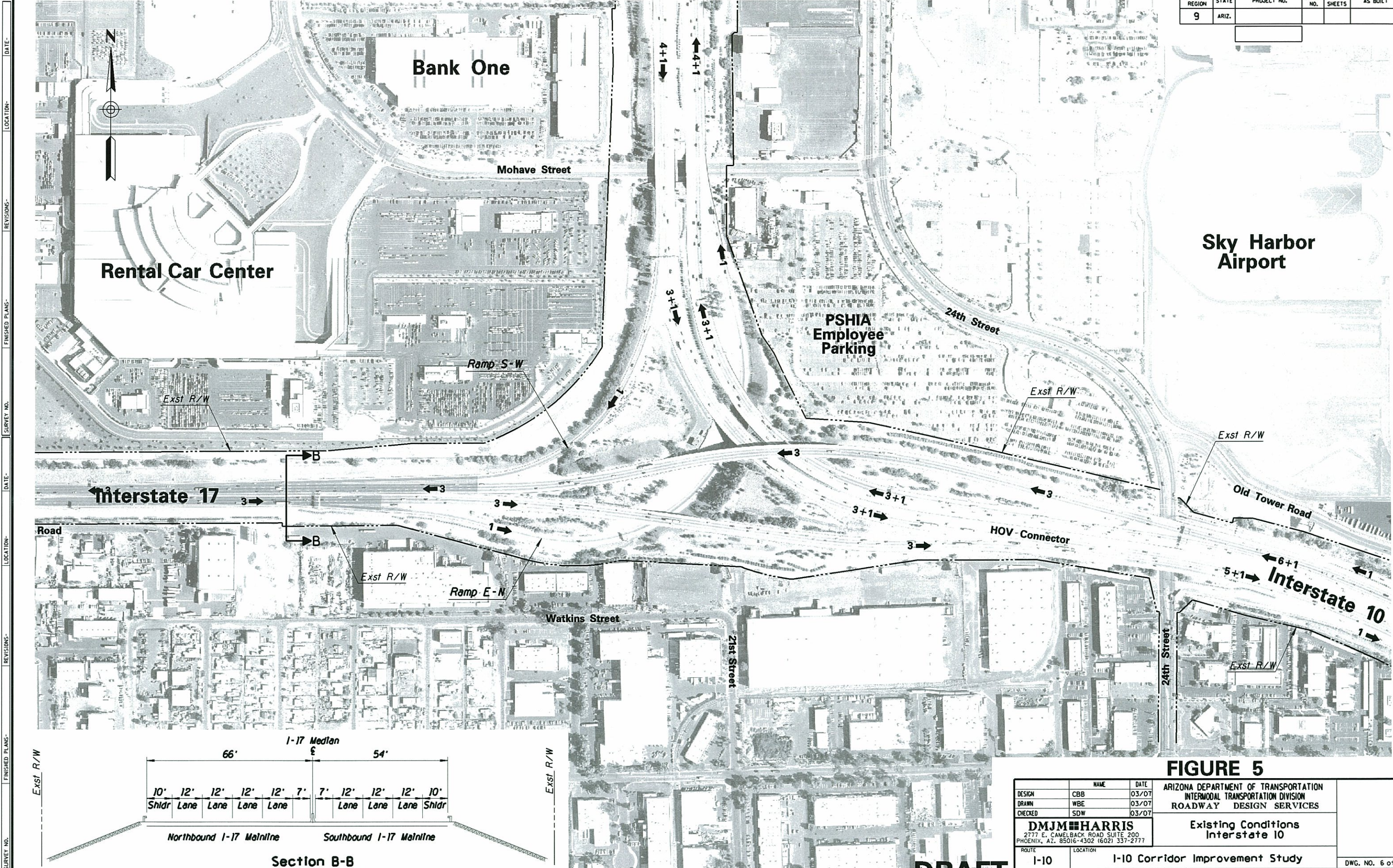


FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES			
DESIGN	CBB		03/07				
DRAWN	WBE		03/07				
CHECKED	SDW		03/07				
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10			
ROUTE		LOCATION					
I-10		I-10 Corridor Improvement Study				DWG. NO. 6 of 20	
TRACS NO. H545401L						PAGE 38 OF	

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

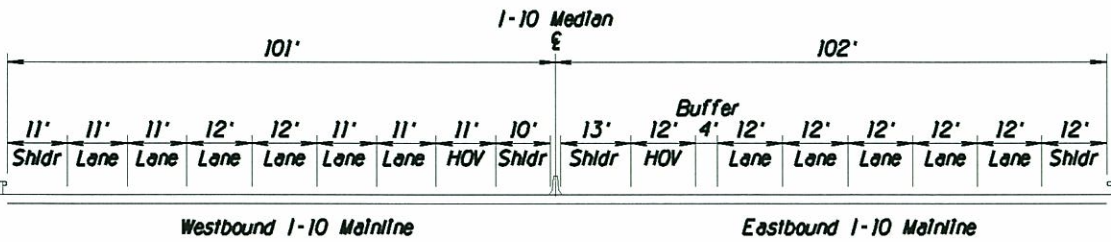
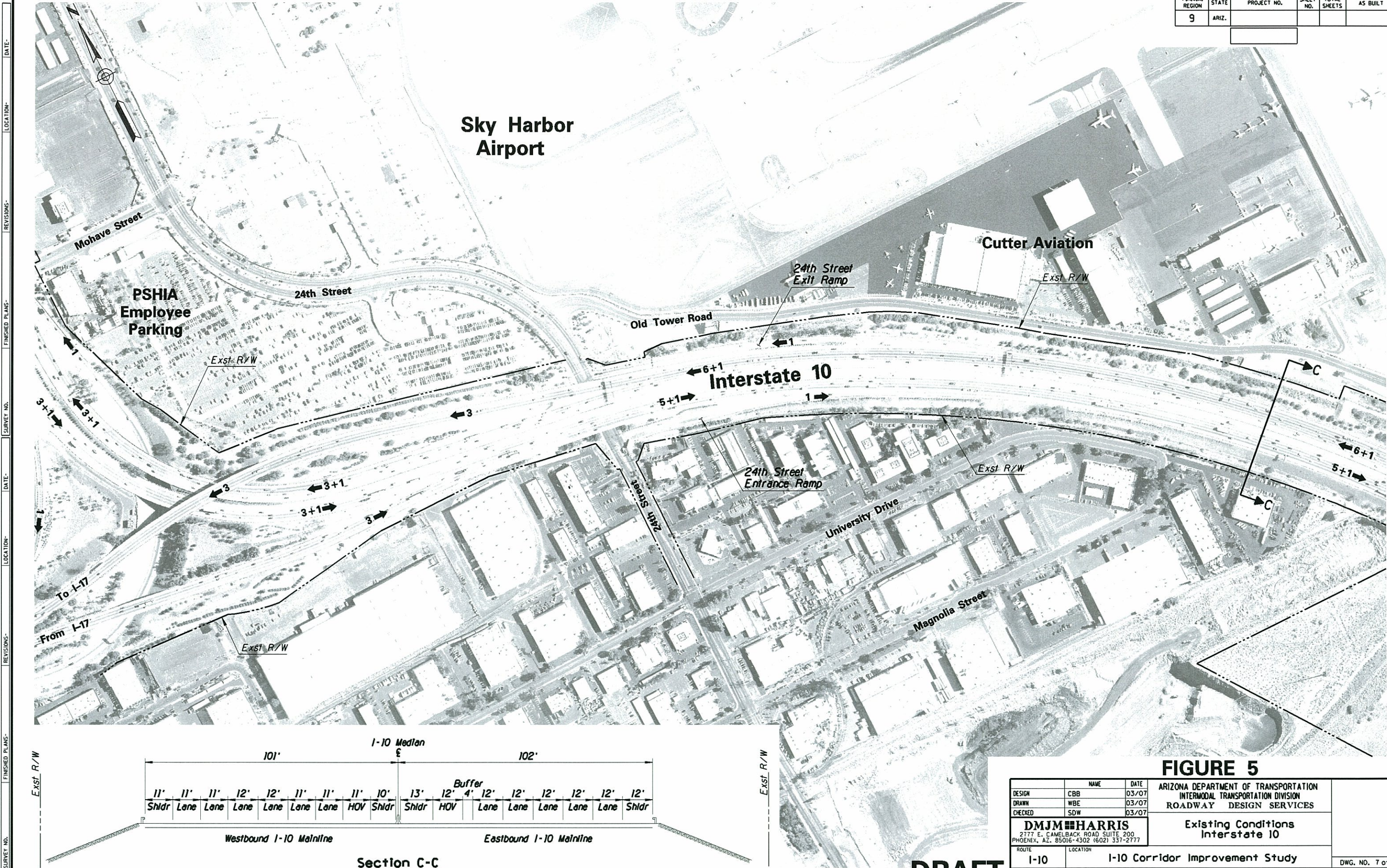
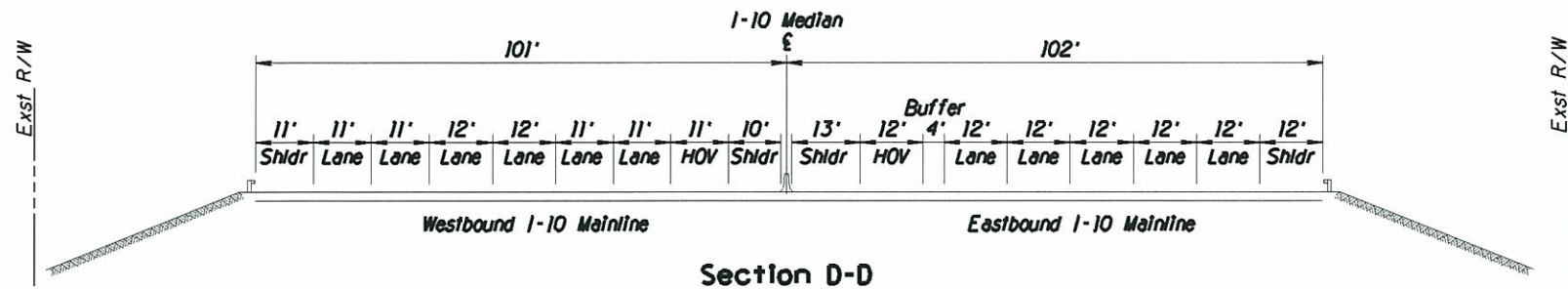


FIGURE 5

	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	Existing Conditions Interstate 10
DESIGN	CBB	03/07		
DRAWN	WBE	03/07		
CHECKED	SDW	03/07		
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 331-2777				
ROUTE LOCATION				
I-10		I-10 Corridor Improvement Study		DWG. NO. 7 of 20
TRACS NO. H545401L			PAGE	39 OF

DRAFT

DATE: LOCATION: REVISIONS: SURVEY NO. DATE: LOCATION: REVISIONS: SURVEY NO.



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

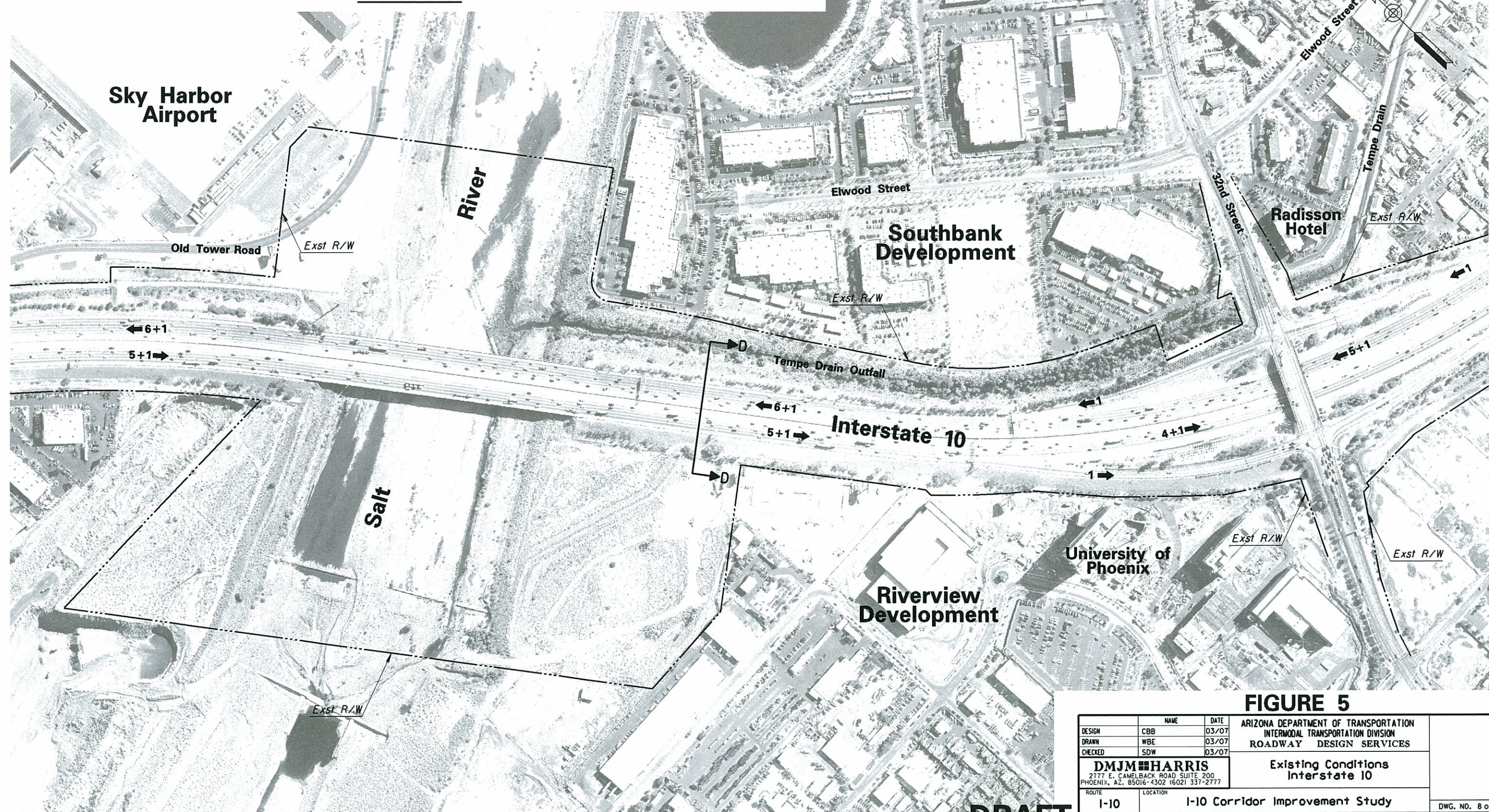


FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE	DATE	03/07	
CHECKED	SDW	DATE	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study	
TRACS NO. H54540IL				DWG. NO. 8 of 20

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

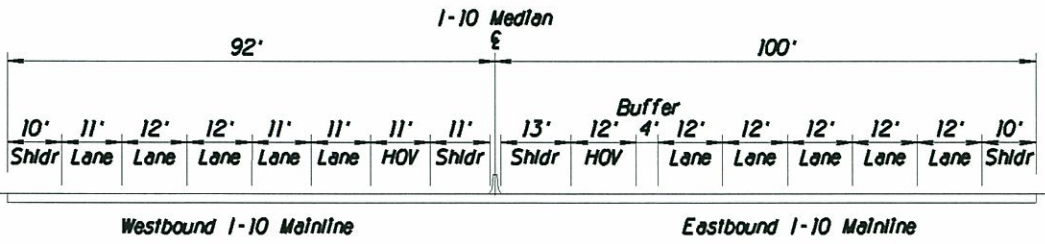


FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE	DATE	03/07	
CHECKED	SDW	DATE	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study	
TRACS NO. H545401L				DWG. NO. 9 of 20
				PAGE 41 OF

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

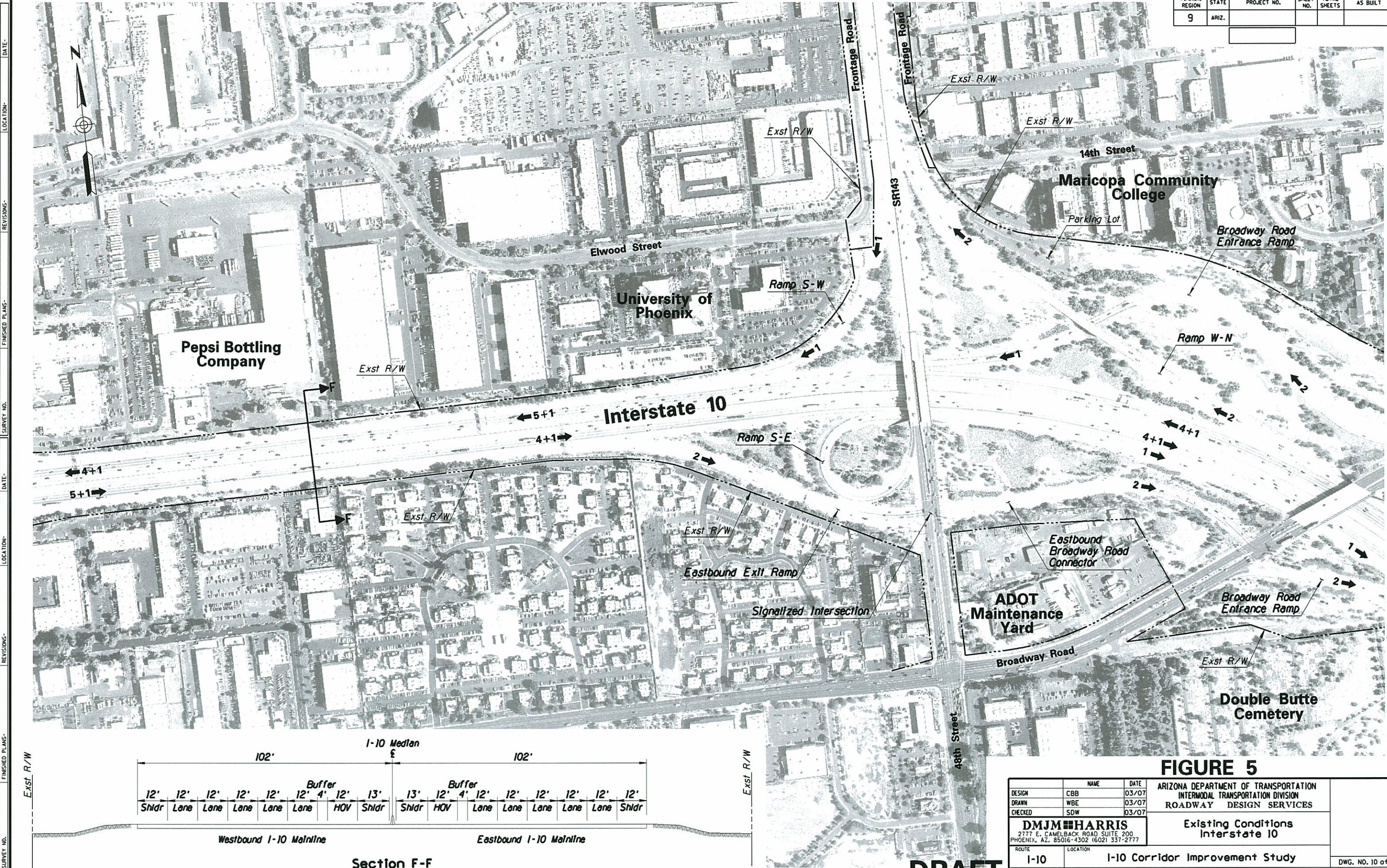


FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	
DRAWN	WBE	DATE	03/07		
CHECKED	SDW	DATE	03/07		
DMJM HARRIS		2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777		Existing Conditions Interstate 10	
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study		DWG. NO. 10 of 20
TRACS NO. H545401L		PAGE		42 OF	

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

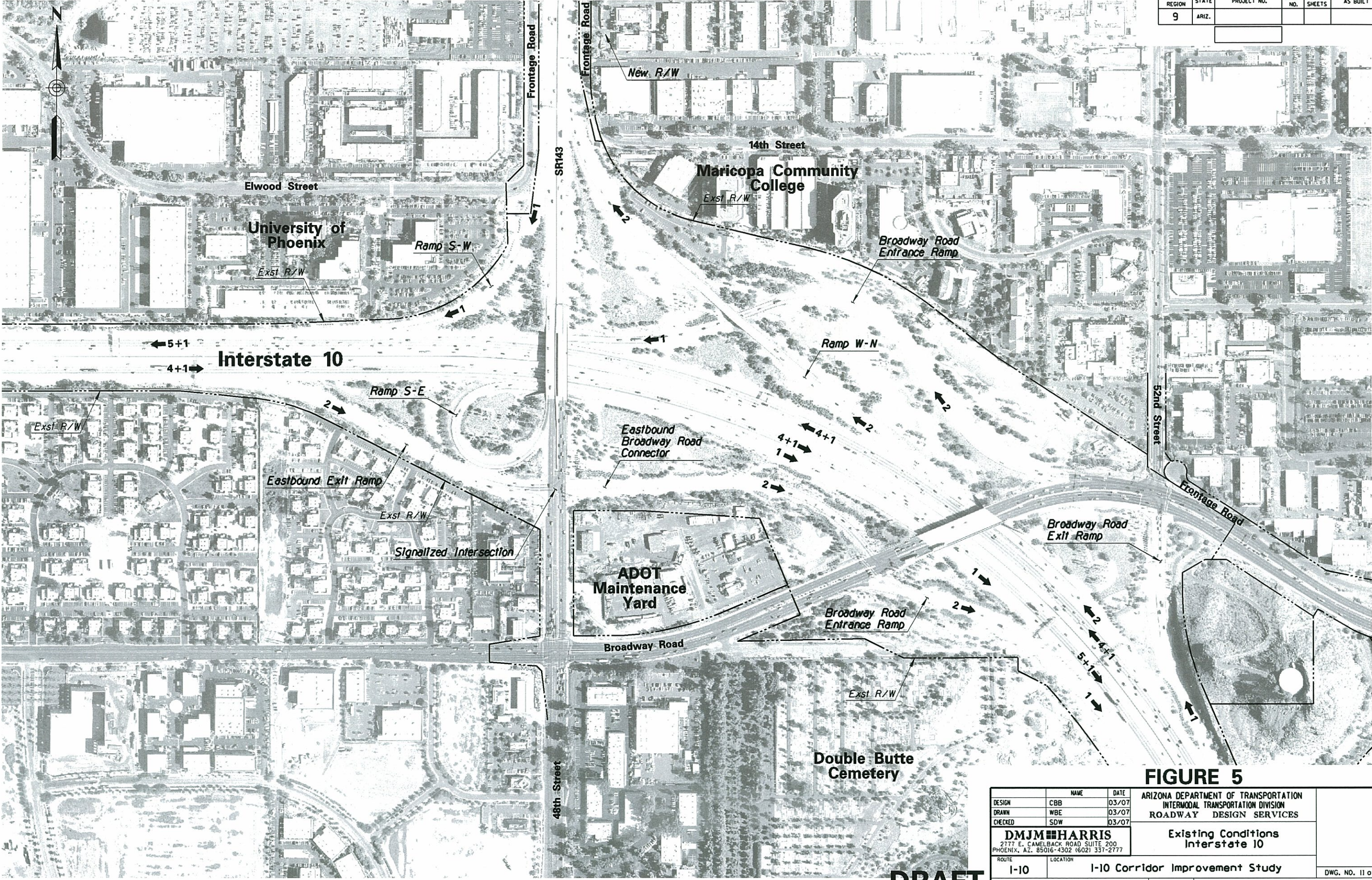


FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE	DATE	03/07	
CHECKED	SDW	DATE	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10
ROUTE		LOCATION		
I-10		I-10 Corridor Improvement Study		DWG. NO. 11 of 20
TRACS NO. H545401L				PAGE 43 OF

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

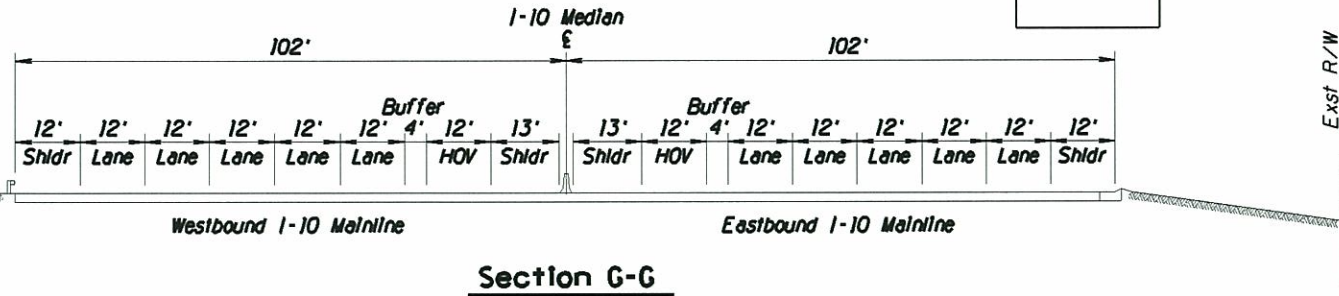
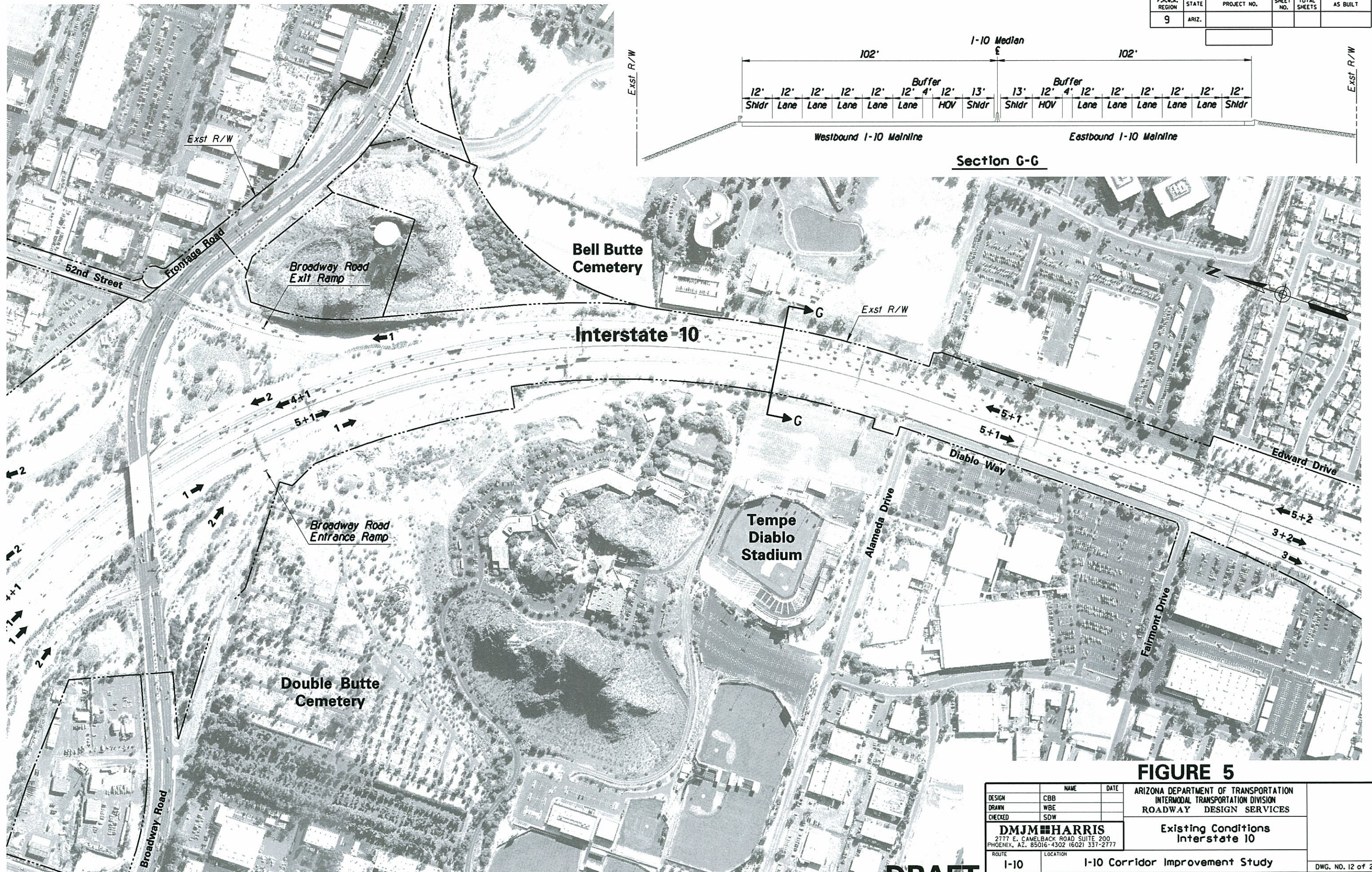


FIGURE 5

DESIGN	CBB	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE			
CHECKED	SDW			
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study	
TRACS NO. H545401L				DWG. NO. 12 of 20
PAGE 44 OF				

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

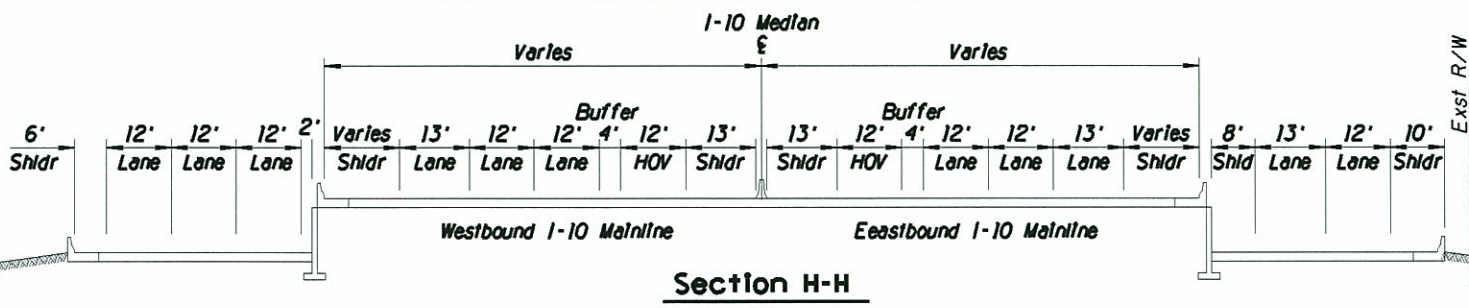
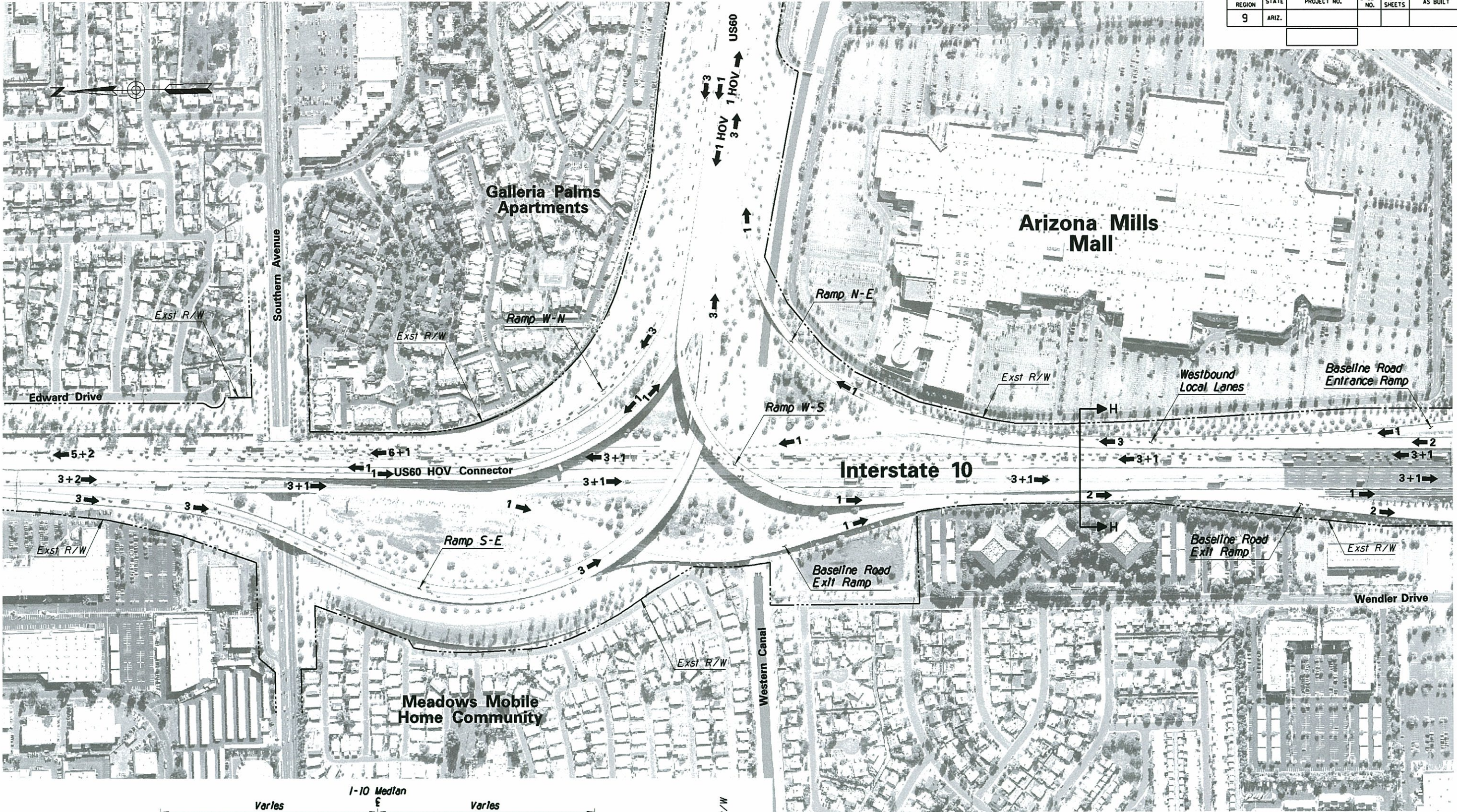


FIGURE 5

DESIGN	CBB	DATE	03/07
DRAWN	WBE	DATE	03/07
CHECKED	SDW	DATE	03/07
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777			
ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES			
Existing Conditions Interstate 10			
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study
TRACS NO. H545401L			DWG. NO. 13 of 20
PAGE 45 OF			

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

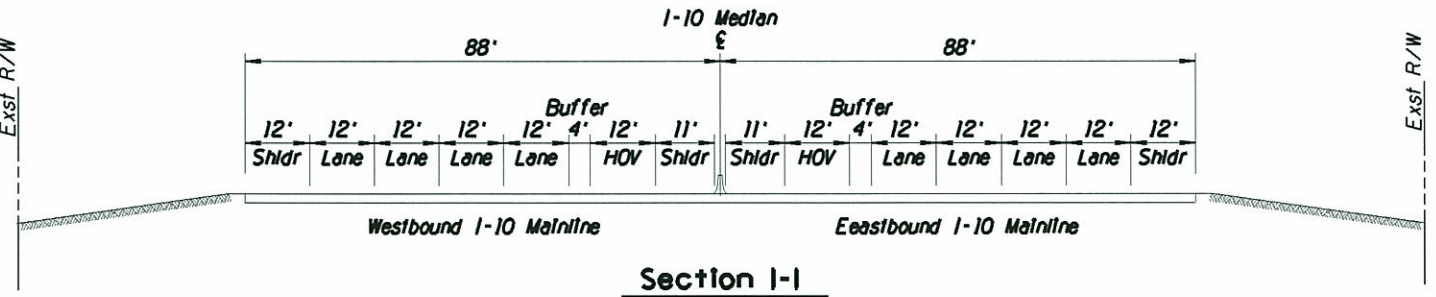
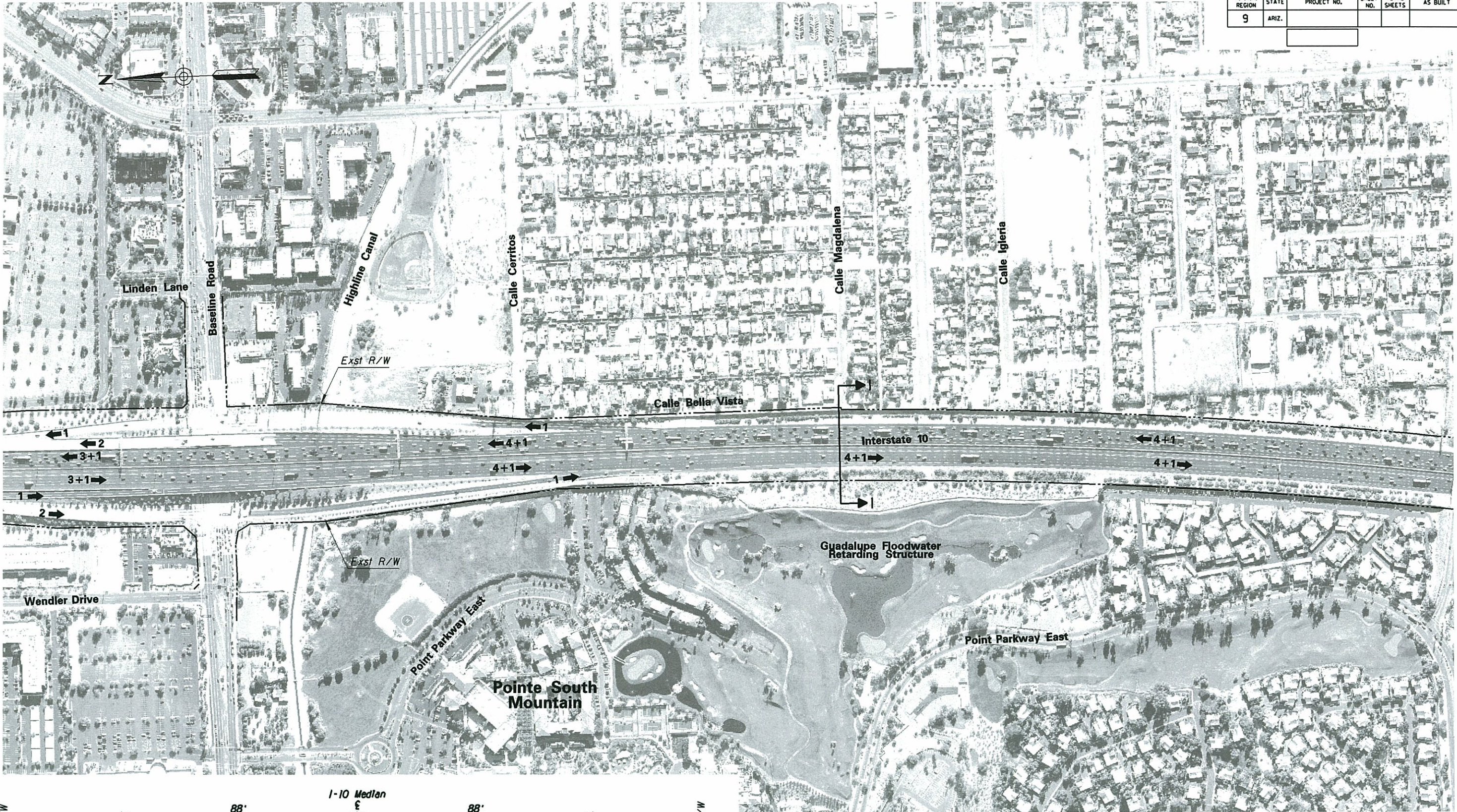


FIGURE 5

	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DESIGN	CBB	03/07	
DRAWN	WBE	03/07	
CHECKED	SDW	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777			Existing Conditions Interstate 10
ROUTE	LOCATION		
I-10	I-10 Corridor Improvement Study		DWG. NO. 14 of 20
TRACS NO. H545401L			PAGE 46 OF

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

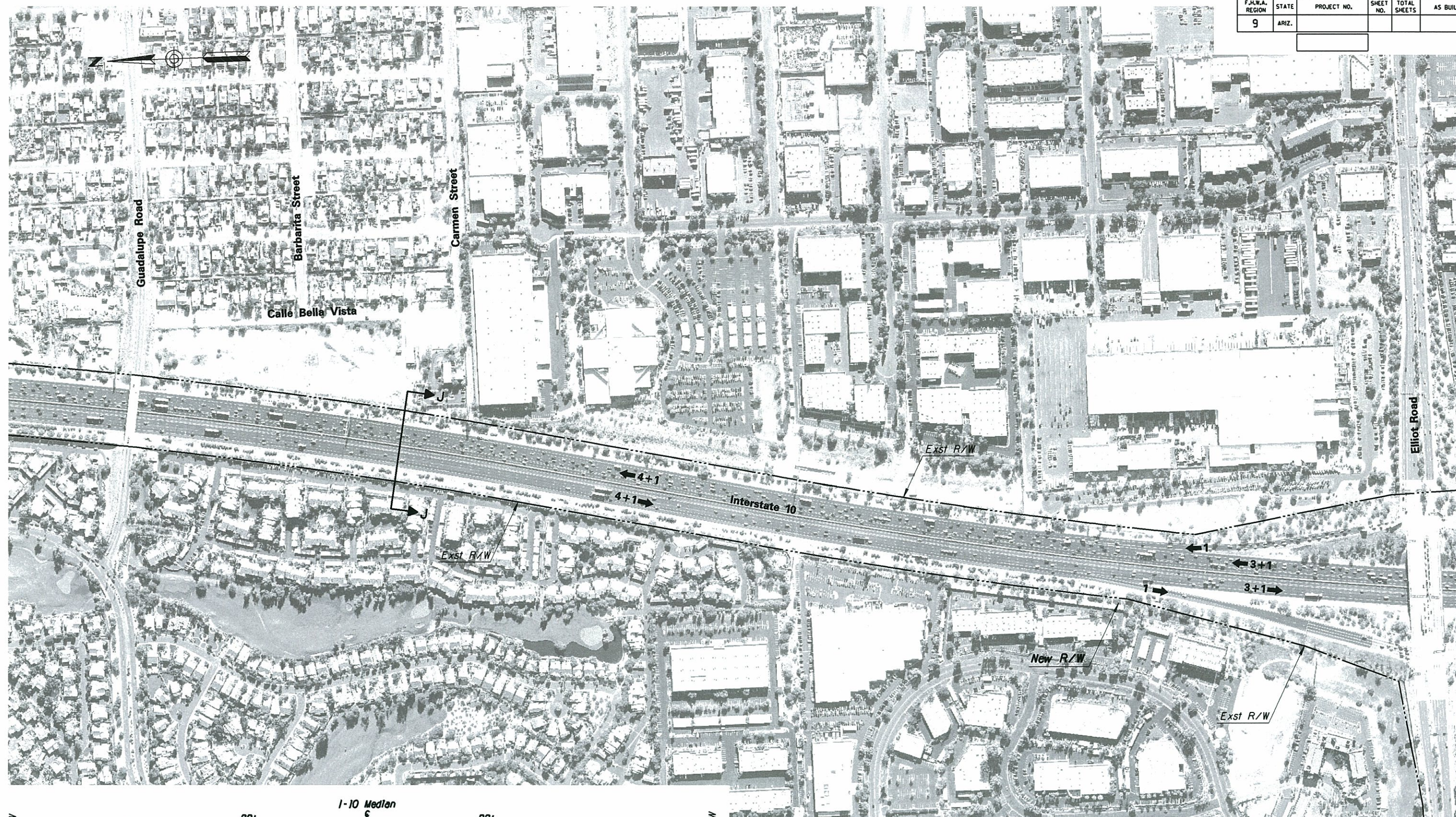


FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	
DESIGN	CBB		03/07		
DRAWN	WBE		03/07		
CHECKED	SDW		03/07		
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10	
ROUTE		LOCATION			
I-10		I-10 Corridor Improvement Study		DWG. NO. 15 of 20	
TRACS NO. H545401L				PAGE 47 OF	

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

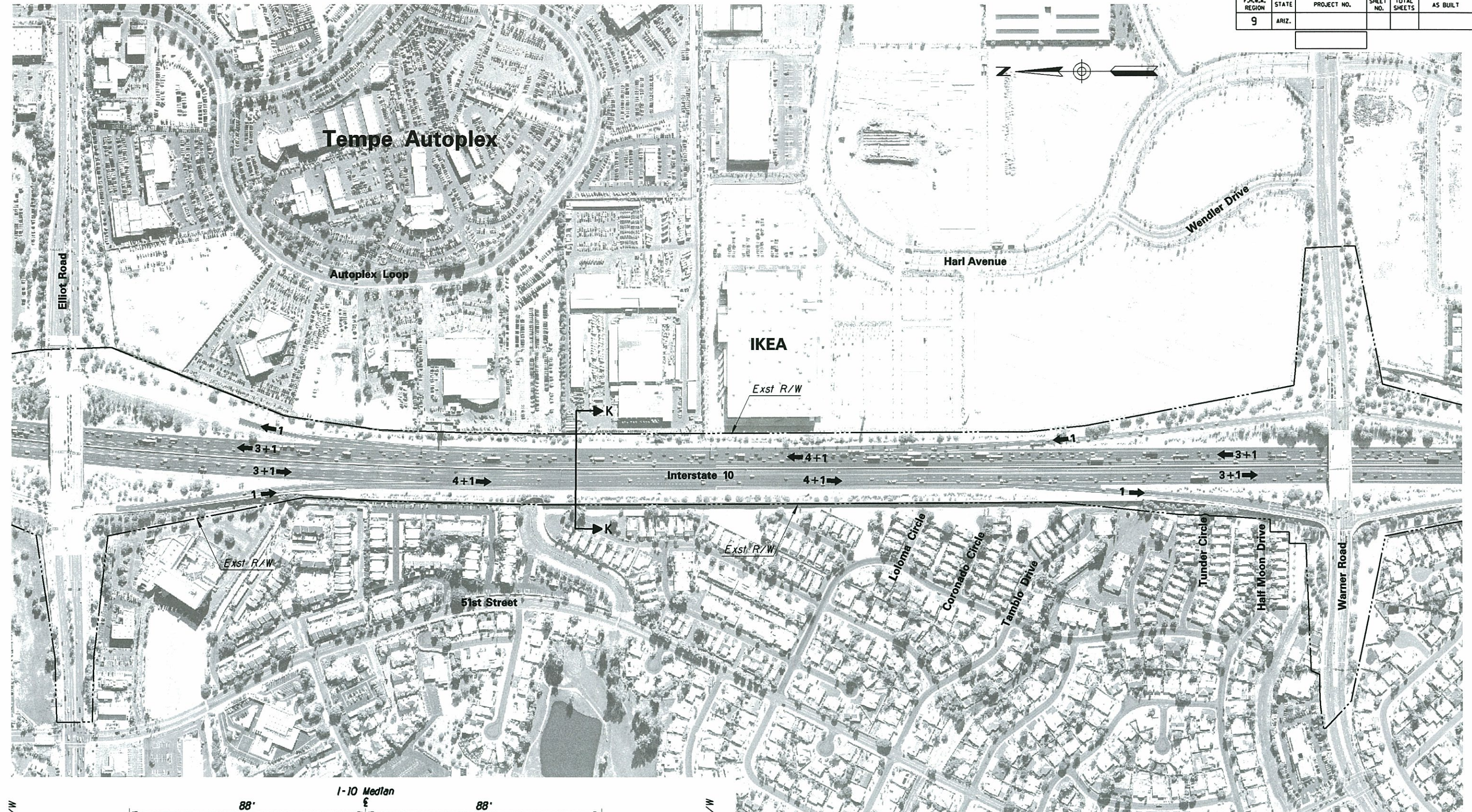


FIGURE 5

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	
DESIGN	CBB		03/07		
DRAWN	WBE		03/07		
CHECKED	SDW		03/07		
DMJM HARRIS 2777 E. CAMELBACK ROAD, SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10	
ROUTE		LOCATION			
I-10		I-10 Corridor Improvement Study		DWG. NO. 16 of 20	
TRACS NO. H545401L				PAGE 48 OF	

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

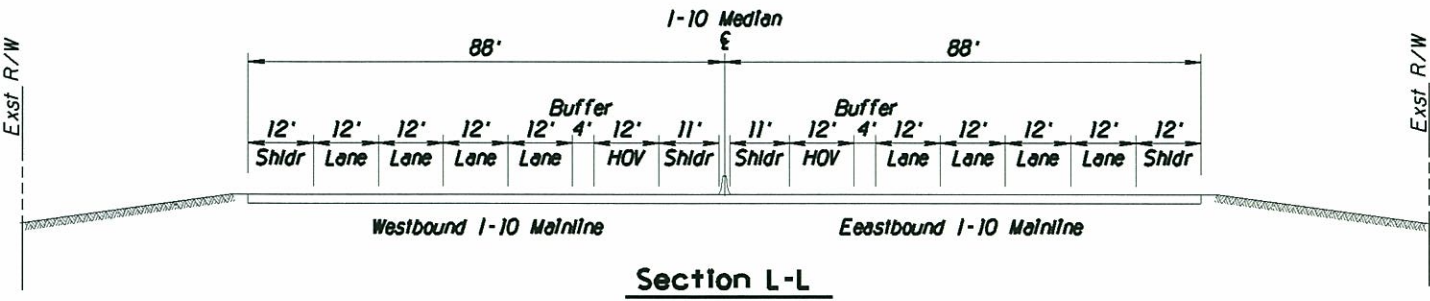
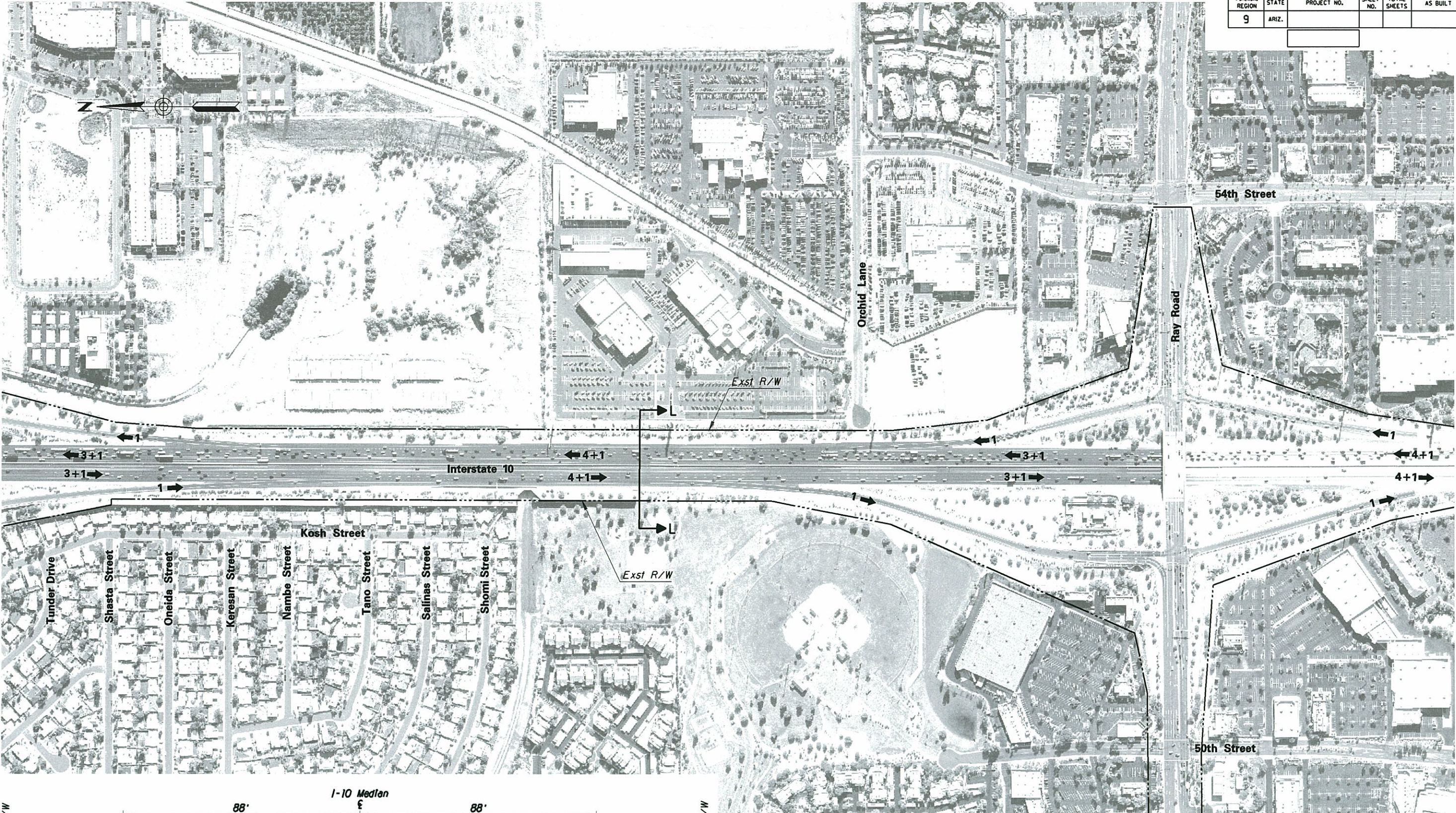


FIGURE 5

DESIGN	CBB	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE		03/07	
CHECKED	SDW		03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions Interstate 10
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study	
TRACS NO. H545401L				DWG. NO. 17 of 20
				PAGE 49 OF

DRAFT

DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO. DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO.

F.J.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

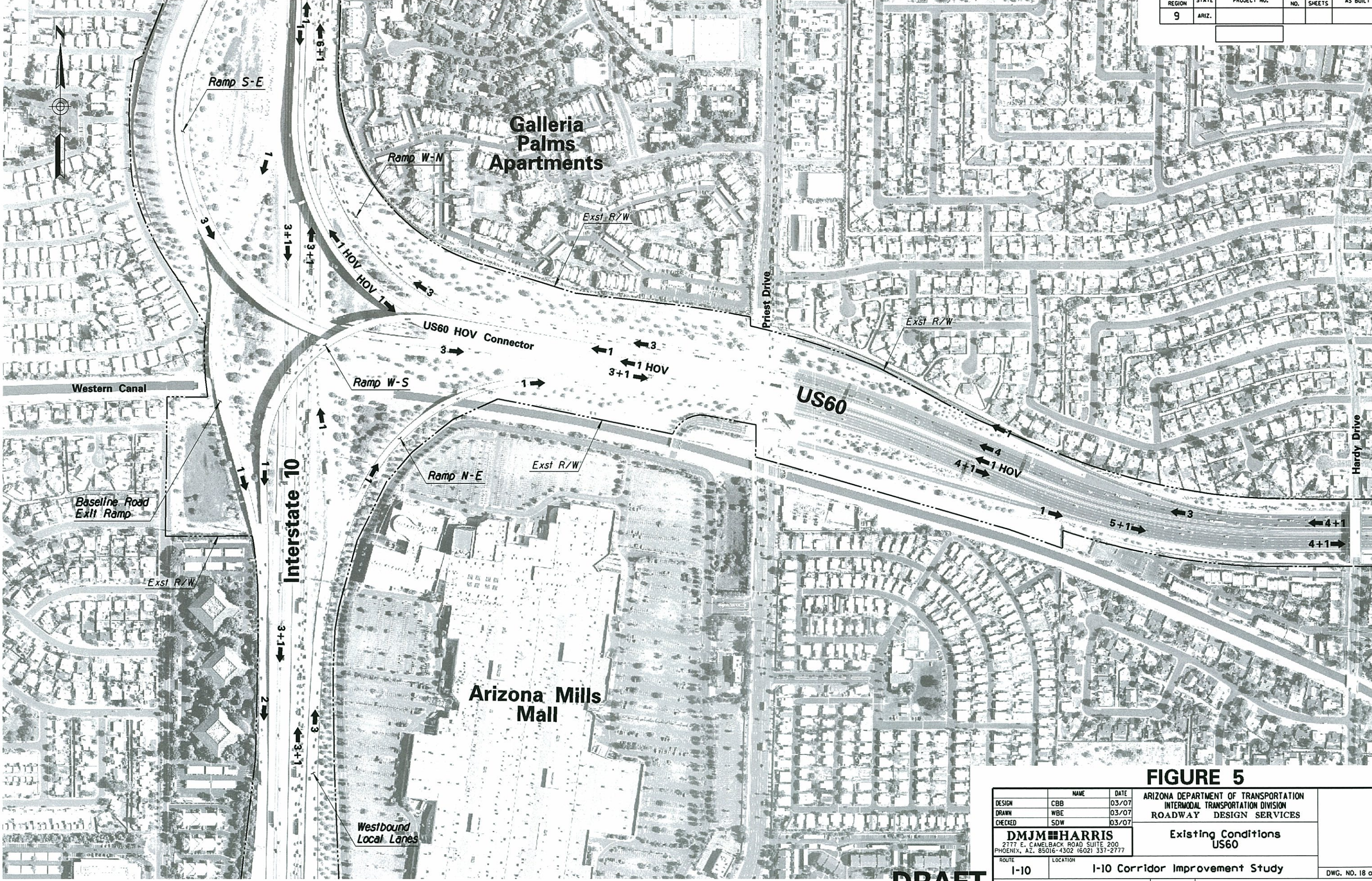
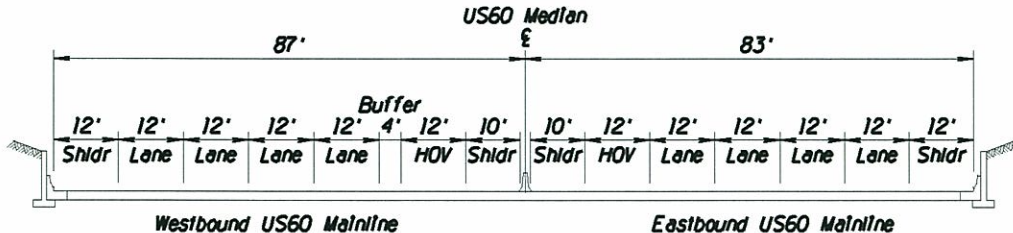
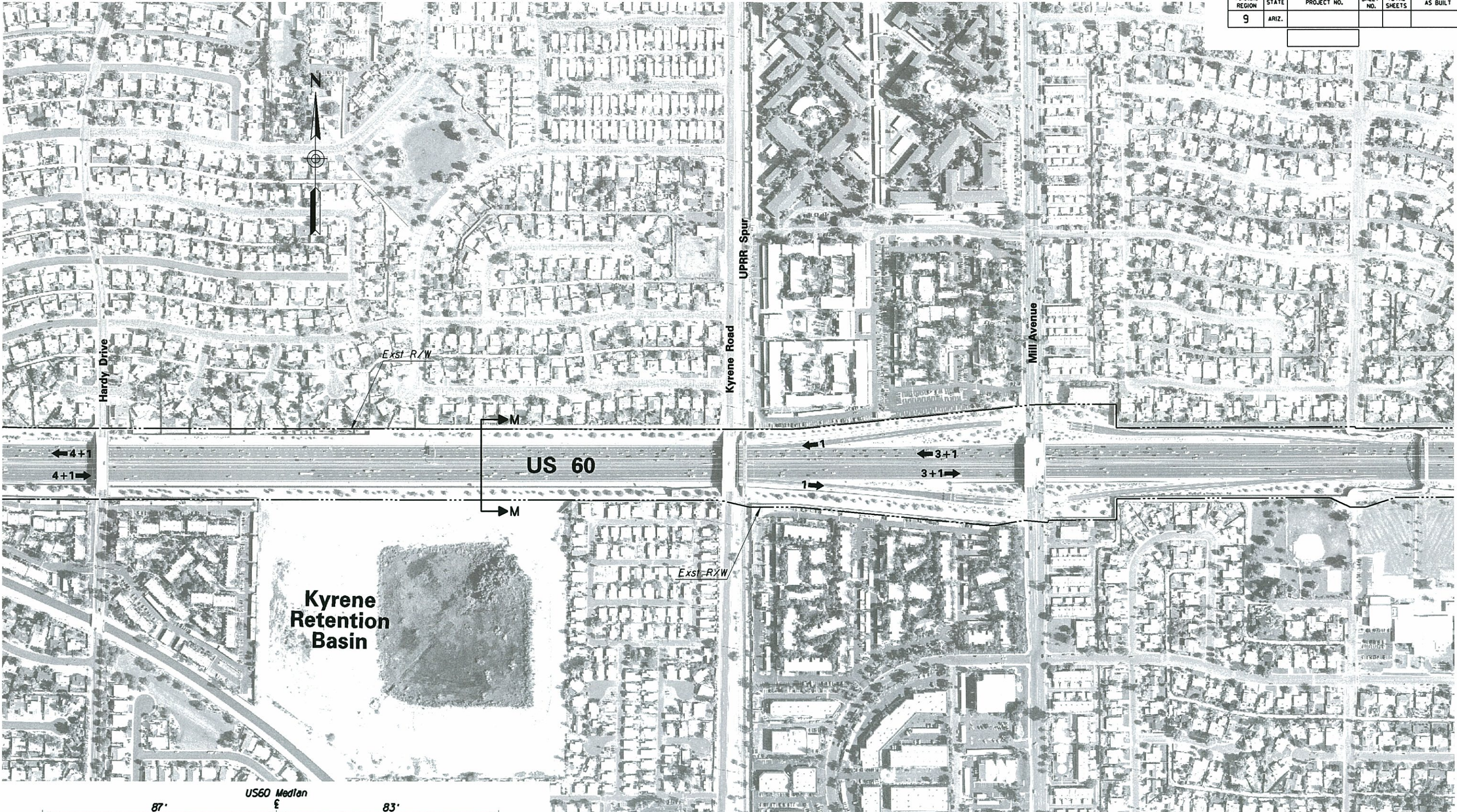


FIGURE 5

DESIGN	CBB	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	
DRAWN	WBE		03/07	Existing Conditions US60	
CHECKED	SDW		03/07		
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study		DWG. NO. 18 of 20
TRACS NO.	H545401L			PAGE	50 OF

DRAFT

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				



Section M-M

FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE	DATE	03/07	
CHECKED	SDW	DATE	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions US60
ROUTE		LOCATION		I-10 Corridor Improvement Study
I-10				
TRACS NO. H545401L				DWG. NO. 19 of 20

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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

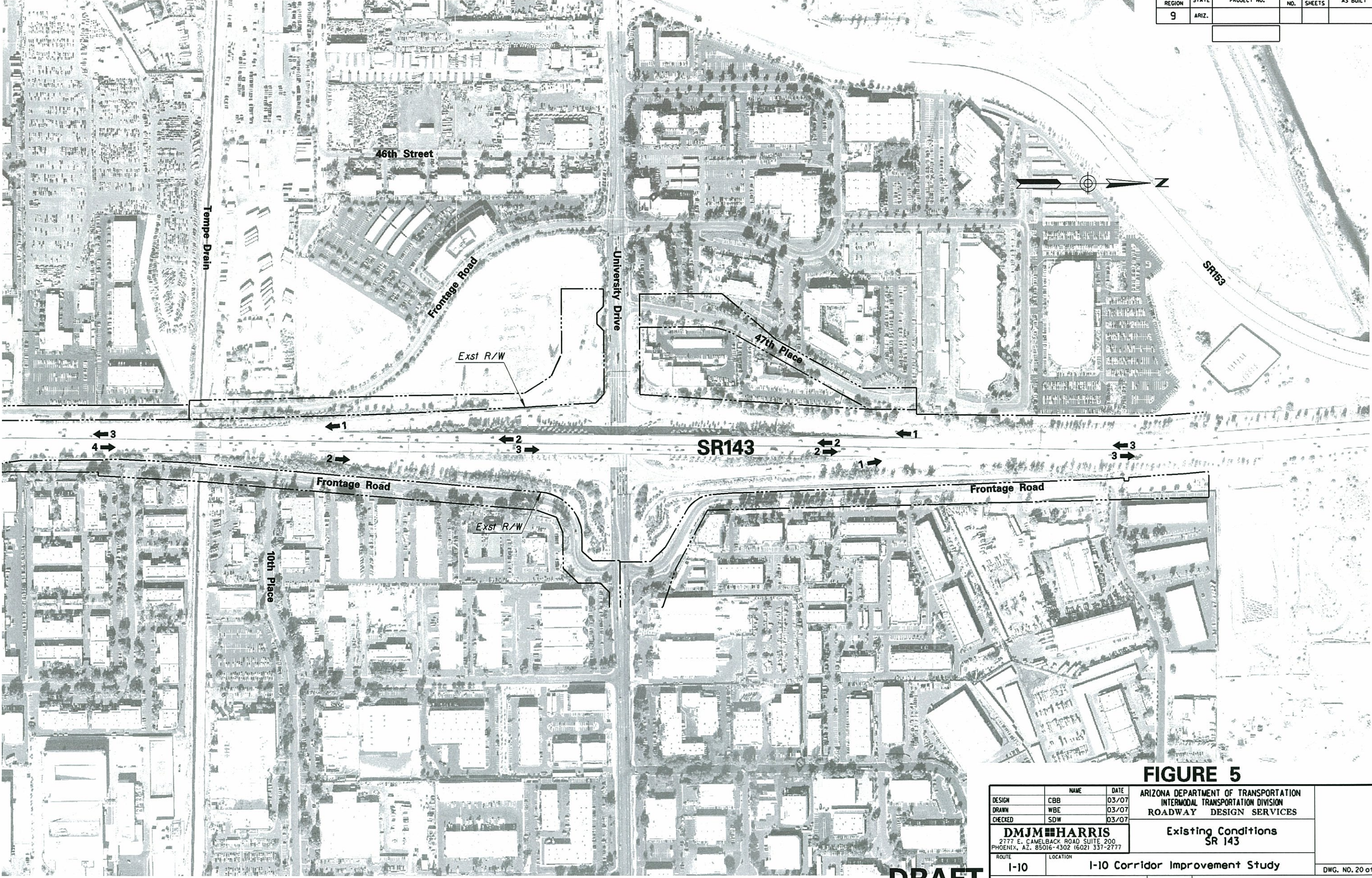


FIGURE 5

DESIGN	CBB	DATE	03/07	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES
DRAWN	WBE	DATE	03/07	
CHECKED	SDW	DATE	03/07	
DMJM HARRIS 2777 E. CAMELBACK ROAD SUITE 200 PHOENIX, AZ. 85016-4302 (602) 337-2777				Existing Conditions SR 143
ROUTE	I-10	LOCATION	I-10 Corridor Improvement Study	
TRACS NO. H545401L				DWG. NO. 20 of 20
PAGE 52 OF				

DRAFT